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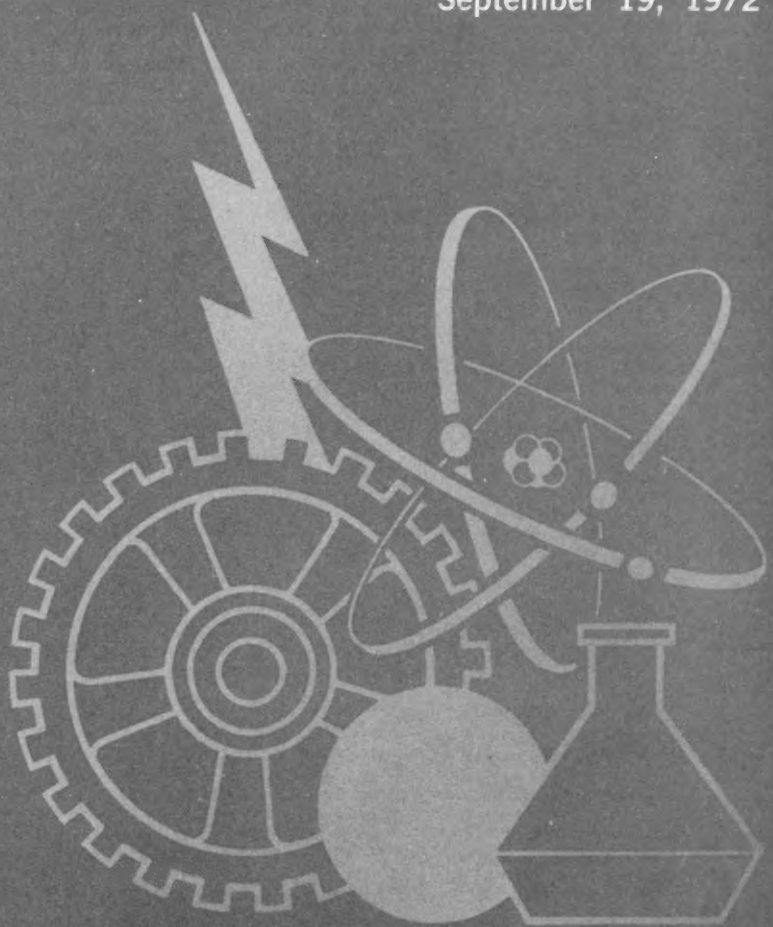

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U. S. DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
TRADEMARK REGISTRATION TREATY

The World Intellectual Property Organization (WIPO) released on July 30, 1972, in Geneva, Switzerland, the third draft of a proposed Trademark Registration Treaty designed to facilitate the international protection of trademarks. This draft Treaty is reproduced below together with the draft Regulations and some of the explanatory materials released by WIPO.

The United States has been invited to send a delegation to participate in the discussions of a Committee of Experts scheduled in Geneva from December 5 to 12, 1972, to consider the draft Treaty and Regulations prior to the convening of a Diplomatic Conference in Vienna, Austria, tentatively scheduled from May 7 to June 2, 1973.

These documents are published by the Patent Office at this time so that interested parties will have an opportunity to review them and offer comments for consideration in preparation for the December meeting.

Interested parties should submit their views or suggestions to the Commissioner of Patents, Washington, D.C., 20231, by November 20, 1972. Further notice concerning the Diplomatic Conference will be published after the Paris Union Assembly meeting in September, which will determine the final scheduling of the Diplomatic Conference.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Aug. 10, 1972.

INTRODUCTORY MEMORANDUM [TRT/DC/3]
TO THE JULY 30, 1972, DRAFT OF THE TRADEMARK REGISTRATION TREATY
(prepared by the International Bureau)

INTRODUCTION

1. This document, like all the other documents in the TRT/DC series, has been prepared by the International Bureau of WIPO for the diplomatic conference which will be convened for the adoption of the Trademark Registration Treaty. At the time of writing this document, the date and place of that conference are only tentatively fixed for May 7 to June 2, 1973, in Vienna.

2. Documents TRT/DC/1 and TRT/DC/2 contain the drafts of the Trademark Registration Treaty and the Regulations under that Treaty. They are based on the conclusions of the second session of the Committee of Experts on the International Registration of Marks which met at Geneva from May 2 to 8, 1972 (hereinafter referred to as "the Second Committee of Experts").

3. The member States of the Paris Union and 15 intergovernmental and 27 non-governmental organizations, primarily representing trademark owners (particularly private industry), trademark lawyers and trademark agents, were invited. The following were represented:

(a) States: Algeria, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, Czechoslovakia, Denmark, Finland, France, Germany (Federal Republic), Greece, Hungary, Italy, Japan, Monaco, Netherlands, Norway, Philippines, Poland, Portugal, Romania, San Marino, Senegal, Soviet Union, Spain, Sweden, Switzerland, United Kingdom, United States of America, Yugoslavia (34).

(b) Intergovernmental Organizations: United Nations Conference on Trade and Development, Benelux Trademark Office, Commission of the European Communities, Latin American Free Trade Association, Organization of American States (5).

(c) Non-governmental Organizations: American Bar Association (ABA), American Patent Law Association (APLA), Asian Patent Attorneys Association (APAA), Bundesverband der Deutschen Industrie (BDI), Chartered Institute of Patent Agents, Council of European Industrial Federations (CEIF), Deutsche Vereinigung für Gewerblichen Rechtsschutz und Urheberrecht, European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents [UK], Inter-American Association of Industrial Property (ASIPI), International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Agricultural Producers, International Federation of Patent Agents (FICPI), National Association of Manufacturers (NAM) [USA], New York Patent Law Association (NYPLA), Patent and Trademark Institute of Canada, Trade Marks, Patents and Designs Federation (TMPDF), Union des Fabricants [France], Union of European Patent Agents (UNEPA), Union of Industries of the European Community (UNICE), United States Trademark Association (USTA) (22).

4. Experts of intergovernmental and non-governmental organizations had the same opportunities to participate in the discussions as governmental experts.

5. The conclusions of the Second Committee of Experts are reflected in the report of that Committee (document TRT/II/15).

6. A Working Group consisting of eight States will meet in September 1972 in order to examine a proposal of the Government of Belgium relating to the extra-territorial effect of certain refusals and cancellations. The results of that meeting as well as any other meeting which might be held before the diplomatic conference will be the subject of separate documents.

7. The rest of this document is divided into two parts. Part I gives a brief summary of the Draft Treaty. Part II enumerates some of the main advantages expected from an international registration system of marks as proposed in the Draft Treaty.

8. It is to be noted that, the purpose of this document being to give concise information, many details—frequently quite important—had to be omitted. Only documents TRT/DC/1 and 2 are to be regarded as fully reflecting the proposals.

PART I: BRIEF SUMMARY OF THE DRAFT TREATY

9. *National Registration Effect of International Registrations.* The most important feature of the Draft Treaty, the provision which constitutes its *raison d'être*, is that marks—and by this term both trademarks and service

marks are meant—could be registered internationally, that is, with the International Bureau of the World Intellectual Property Organization (WIPO), and that international registration would have in each of the Contracting States (that is, States party to the Treaty) in which the owner of the mark desires protection the same effect as if the mark had been registered in each and every one of such States.

10. A corollary of this "national registration effect," as important as the effect itself, is that international registrations could be renewed every ten years, and such renewals would maintain the national registration effect in each and every one of such States for the periods for which the international renewal was effected.

11. *International Application.* To achieve protection by international registration of a mark, the owner would file an international application. Only residents and nationals of Contracting States would have the right to file international applications. The international application would identify the applicant, the mark, the goods and/or services in connection with which protection of the mark is desired, and the States ("designated States") in which protection is desired.

12. The goods and/or services would be listed and grouped according to the classes of the International ("Nice") Classification. That Classification has 34 classes for goods, and 8 classes for services. It is used by the national Offices of some 60 countries at the present time.

13. Any Contracting State, including the applicant's own, could be designated. Any number of Contracting States could be designated.

14. A representative may be appointed in the international application for contacts with the International Bureau.

15. The international application could be filed in either English or French. Preparation of the international application would essentially consist in filling in a printed form, distributed free of charge by the International Bureau. Listing the goods and/or services is facilitated by an alphabetical list of practically all conceivable goods and services which accompanies the International Classification of Nice. The said alphabetical list contains the names of some 20,000 products (goods) and services and is available in English, French, German and Spanish—and will soon be available also in Dutch, Italian and Portuguese—in official editions published by the International Bureau. The alphabetical list indicates, by its number, the class to which each product or service belongs and is brought up to date from time to time to cover goods or services which are new.

16. The international application would be subject to the payment of a fee. Part of the fee would be kept by the International Bureau to cover its expenses connected with the publication of the international registration and other processing of the international application. The other part of the fee would belong to the national Offices of the designated Contracting States to cover their expenses connected with the processing of the international registration notified to them by the International Bureau. The amount of the fees payable would depend on the number of the designated States and the number of classes of goods and/or services listed.

17. The International Bureau would check each international application to see whether it complied with the most elementary requirements of any application: Is the applicant sufficiently identified? Is he, on the basis of his nationality or residence indicated by him, entitled to file international applications? Is the reproduction of the mark included? Are goods and/or services listed? Is there at least one State designated? Have the fees been paid? Is the application in one of the prescribed languages (English, French)? Is it signed?

18. It is unlikely that the International Bureau would err in answering such elementary questions. However, if it did, the applicant's rights would still not be affected provided he turns to the national Office of one or more of the designated States for relief. He would have two kinds of relief at his disposal and he would be free to choose between them. One would consist in asking the national Office to request the International Bureau to proceed with the international registration as far as that State (i.e., the State of which it is the national Office) is concerned; if the national Office found that the International Bureau had erred, it would request the Bureau so to proceed and that Bureau would comply. The other remedy would consist in filing an application with the national Office for the registration of the mark in the national register of marks of that State (i.e., the State of which it is the national Office); if the national Office found that the International Bureau had erred, it would treat the said national application as if it had been filed on the date on which the erroneously declined international application was filed.

19. *Later Designations.* Any Contracting State not designated in the international application itself could be designated later. This faculty is important because the applicant or owner might have no interest in a given State when he filed but develop an interest in the same State later, and also because a State might not have been a Contracting State when the international application was filed.

20. *Registration, Publication, and Notification.* Unless the international application is declined because of some formal defect, the mark would be registered in the International Register of Marks and all the relevant data—including the reproduction of the mark and the list of goods and/or services—would be promptly published and individually notified to the national Office responsible for the national registration of marks in each of the designated States.

21. The international registration would normally be effected within a few days after receipt of the international application. The international registration date would be the date on which the International Bureau had received the international application. This rule would be subject to an exception when the application contained some serious defect: in such a case the international registration date would be the date on which the defect is corrected ("later-dating"). Any mistake could be corrected within three months. Some less serious defects, if corrected within one month from the date of an invitation to correct, could even be corrected without any "later-dating."

22. The international publication would be made in a weekly gazette of the International Bureau.

23. The individual notifications could not be different from the contents of the publication because they would consist of reprints of the relevant parts of the gazette.

24. The above remarks also hold as far as later designations are concerned.

25. *Refusal of National Registration Effect.* Each designated State could, as far as it is concerned, refuse the national registration effect on the same grounds as those on which it could refuse an application filed with its national Office for registration in the national register of marks. However, grounds incompatible with the Treaty or with the Paris Convention would be excluded. For example, no designated State could require that the application be translated into its national language or that fees other than its share in the international fees be paid to it.

26. Any such refusal would, however, have to be pronounced, or its possible pronouncement announced ("notice of possible refusal")—for example, where the registration has been opposed by a third party and the refusal depends on whether the opposition will be successful—before the expiration of 15 months, counted from the date of the international publication of the interna-

tional registration, or of the later designation, as the case may be.

27. Furthermore, the refusal or notice of possible refusal would have to contain the grounds for the refusal or possible refusal. Although the final decision could be rendered after the expiration of the 15 months period, it would be effective only if it contained and was based on at least one of the grounds indicated in the notice of possible refusal. According to a possible variant, this condition would not apply where the decision was that of a court.

28. *Use of the Mark.* No designated State could refuse the registration effect, cancel it or otherwise impair the rights of the owner on the ground that he had not used his mark before the expiration of three years, counted from the date of the international registration (or the later, designation, as the case may be). No such moratorium on use is, however, required if the mark's international registration was preceded by a national registration or another international registration three years older than the international registration, and the term of this moratorium may be correspondingly reduced where the mark's international registration was preceded by a national registration or another international registration which is less than three years older than the international registration. The moratorium of three years would have to be extended, but never by more than two years, where at the expiration of the third year it was uncertain—because of a pending refusal proceeding—whether the national registration effect would obtain.

29. It is to be noted that the national law of any Contracting State could provide than any action for infringement by the owner of the international registration and based upon such registration may not be brought until the said owner has started using the mark in the said State and any remedy therefrom may relate only to the period of such use.

30. *Declaration of Actual Use.* Routine declarations of actual use could be filed with the International Bureau on an internationally agreed form or in the form prescribed by the national law of the State which requires such declarations.

31. *Declaration of Intent To Use.* Declarations of intent to use connected with any designation and filed with the International Bureau would have the same effect as declarations of intent to use connected with national applications and filed with national Offices.

32. *Preservation of Acquired Rights.* Whenever the owner of a national registration switches over to international registration, his rights acquired under the national registration would not be affected and would also be deemed to be included in the international registration. The same would apply to switching over from international registration under the Madrid Agreement to international registration under the new Treaty.

33. *Right of Priority.* International applications could invoke the priority of earlier national applications, and vice versa. In the former case, the single declaration of priority, made in the international application, would apply to all designated States.

34. *Assignments.* Although their substantive validity would be subject to the national law of each State, assignments and other changes in ownership with respect to some or all of the designated States, or concerning some or all of the goods and/or services listed, could be recorded in the International Register of Marks.

35. *"Union."* The Contracting States would constitute a Union with an Assembly and a Secretariat, the latter being provided by the International Bureau. The Assembly could amend the Regulations subject to a ⅗ and, in some cases, ¾ majority vote.

36. *Financial Obligations of Contracting States.* Except for the possibility of having to contribute towards a working capital fund, the Contracting States would not incur any financial obligations and would not have to pay any contributions.

37. *Becoming Party to the Treaty.* Only States members of the Paris Union could become party to the Treaty. Any State could make its acceptance of the Treaty conditional on the acceptance of the Treaty by one, one of two, or two other States specified by it.

38. *Regulations.* The Regulations would be attached to the Treaty and would be adopted at the same time as the Treaty itself.

PART II: MAIN ADVANTAGES

39. *Complexity of the Present System.* Today, the owner of a mark who wishes to secure protection of a mark in several States must—unless he can avail himself of the benefits of the Madrid Agreement and the said States are party to that Agreement—separately register the mark in each of those States. The number of such States may be very high. More than 50 is not unusual. The burden placed on the owner is consequently a heavy one: preparation of a separate application for each State; translation into the various languages of those States; filing separately in each of them; being familiar with their widely varying requirements, in particular with their fee structures; keeping an eye on as many different due dates for renewal as there are States in which he wishes protection; transfer of money in as many different currencies as there are such States; uncertainty as to whether he is aware of the latest requirements and the latest fee schedules; uncertainty as to whether the money he transfers to persons or authorities in so many States will arrive in time and will really be applied to the mark he wishes it to be applied to.

40. *Administrative Simplicity Under the Treaty.* Under the Draft Treaty, these difficulties would almost entirely disappear. There would be only one application; no translation, or only one, would be needed; that translation would mainly relate to the list of goods and/or services and would be easy to make on the basis of the official English and French lists of the International Classification; the amount of the fees payable would be easy to compute on the basis of a single schedule of fees; filing would be in one place (with the International Bureau); renewals would be in one place (the same Bureau); only one date repeated once every ten years would have to be remembered for renewal purposes; all fees would be paid in one currency (the Swiss), by a simple transfer, to an agency experienced in currency transfers; it would suffice to know the Treaty and its Regulations—rather than a great number of different national laws—in order to be sure that the application is correct and the renewal is correct.

41. *Shortening of Period of Uncertainty.* The fact that the Treaty would oblige each designated Office to notify refusals or notices of possible refusals within a period of 15 months would reduce the period of uncertainty prevailing without the Treaty as to the ultimate fate of applications in some of the States. Under the Treaty, the applicant would know, once the said period was over, whether he had acquired the national registration effect or, if there was still no final decision, the obstacles it would be necessary to overcome in order to secure that effect.

42. *Declarations of Intent to Use and Routine Declarations of Actual Use.* Such declarations are required in a number of States. Under the Treaty, they could be filed with the International Bureau.

43. *Requirement of Using the Mark.* Laws vary greatly from one another on the question whether the owner of the mark loses his rights because of non-use, particularly during the period around the initial registration. The Treaty would not create uniformity in this respect but it would guarantee to the owner that non-use before, at the time of, or during the first three years after the interna-

tional registration could not result in refusal or cancellation of his mark.

44. *Comparison With the System of the Madrid Agreement.* Most of the advantages mentioned in connection with applications and renewals exist also under the Madrid Agreement. But that Agreement also contains disadvantages. The most important of them is that any international application must be preceded by registration of the mark in the national register of marks of the country of origin of the mark. This may be impossible for reasons peculiar to the national law of that country or because of anticipations existing only in that country. Furthermore, the procedure leading to registration in the country of origin may last for a long time, and may even take years, causing the loss of any priority right and, in countries whose laws follow the principle "the-earlier-registrant-has-the-stronger-right," even the loss of all rights. All these disadvantages would not exist under the Draft Treaty since, in the proposed system, international applications would be filed direct with the International Bureau and the existence of a registration in the country of origin would not be required.

45. None of the advantages mentioned in connection with the three-year moratorium on the requirement to use the mark, the declarations of intent to use, and the routine declarations of actual use, exists under the Madrid Agreement.

DRAFT

TRADEMARK REGISTRATION TREATY [TRT/DC/1]

(prepared by the International Bureau)

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Trademark Registration Treaty

(Third Draft)

COMMENTS ON THE TITLE OF THE TREATY

The title proposed is "Trademark Registration Treaty."

It is admitted that this title could be objected to on at least two grounds: first, that it uses the word "trademark" instead of "mark" and, second, that it does not specify that the registration in question is an international registration.

To the first objection, one could reply that, in the English language, the first meaning of the word "mark" is *not* "trademark." Thus "mark" could lead to misunderstandings. That is why it is proposed to use in the title the term "trademark"—which is unequivocal. The *text* itself uses the word "mark" to convey, to the specialist, the assurance that service marks have not been forgotten.

To the second objection, one could reply that, a treaty being an international matter *par excellence*, the word "Treaty" in the title already conveys the idea that the registration must be of some international kind. Here, too, it is of course true that the text uses the expression "international registration," but for a good reason, namely, to distinguish it from national registration. In the title, that distinction follows, as has been stated, from the juxtaposition of the words "Registration" and "Treaty."

Thus, the title—even if not quite in conformity with the terminology of the text—is believed to convey the essence of its subject matter and to be understandable also to the non-specialist.

Furthermore, it has the obvious advantage of being brief.

Finally, it has the advantage that its initials—TRT—give an abbreviated title which is easy to pronounce and easy to memorize.

The title of this Treaty in French is "Traité concernant l'enregistrement international des marques." It has been proposed that when referred to in French in an abbreviated form, the initials "TEM" be used. The French version of these comments refers to this possibility.

INTRODUCTORY PROVISIONS

ARTICLE 1

Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

COMMENTS ON ARTICLE 1

Sole paragraph: The Treaty would be a "special agreement" under Article 19 of the Paris convention since it would be concluded among States party to that Convention (see Article 37(1) of the Draft Treaty). Article 19 of the Paris Convention reads as follows: "It is understood that the countries of the [Paris] Union reserve the right to make separately between themselves special agreements for the protection of industrial property, in so far as these agreements do not contravene the provisions of this [Paris] Convention."

Each of the seven agreements so far concluded under Article 19 of the Paris Convention, which provides also for the establishment of administrative organs (at least an Assembly of the Contracting States), provides for the constitution of a special "Union" under the "general" Paris Union (constituted by the Contracting States of the Paris Convention). Thus, the constitution of a Union is in conformity with tradition.

ARTICLE 2

Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

(i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;

(ii) "international application" means an application filed for international registration;

(iii) "applicant" means the natural person who or legal entity which files the international application;

(iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of all or fewer than all the designated States and in respect of all or some only of the goods and/or services listed in that registration;

(v) "mark" means both a trademark and a service mark; **[it also includes a certification mark and a collective mark;]

(vi) "national mark" means a mark registered by a government authority of a Contracting State having the power to grant registrations with effect in that State; references to a *national mark* shall not be construed as referring also to regional marks;

(vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;

(viii) references to any *final* decision or *final* refusal shall be construed as references to a decision or refusal against which there is no remedy, or against which all remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;

(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau;

(x) references to the *date of the publication* of the international registration or to the *date of the publication* of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;

(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;

(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designations;

(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of national Offices;

(xiv) "national register of marks" means the register of marks kept by a national Office in which national and/or regional marks are registered;

(xv) "designated Office" means the national Office of the designated State;

(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;

(xvii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;

(xviii) "Union" means the Union referred to in Article 1:

(xix) "Assembly" means the Assembly of the Union;

(xx) "Organization" means the World Intellectual Property Organization;

(xxi) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureaux for the Protection of Intellectual Property (BIRPI); and where any provision refers to the receiving of documents, or of payments, by the International Bureau, it also includes any agency of that Bureau established under Article 30(2)(a)(ix);

(xxii) "Director General" means the Director General of the Organization;

(xxiii) "International Classification" means the classification established under the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;

(xxiv) "Regulations" means the Regulations referred to in Article 33.

COMMENTS ON ARTICLE 2

These abbreviated expressions seem to be self-explanatory. However, the following might be noted.

ad (iii) and (iv): The person who files an international application is called an *applicant* only as long as his application is not accepted. Once the international registration is effected, he is called the *owner of the international registration.*

See, however, Article 4(5) and Rule 1.3 (Associations), both appearing between brackets; they provide, in essence, that certain associations would be assimilated to legal entities.

ad (iv): Where any change in the ownership of an international registration is partial—that is, where it relates to fewer than all the designated States but to all or some only of the goods and/or services, or where it relates to all the designated States but to some only of the goods and/or services (see Article 14(1)(a)—the international registration will have at least two owners: the earlier owner, that is, the owner who is owner in respect of those designated State(s) and those goods and/or services for which no change in ownership is recorded in favor of the new owner(s), the new owner(s), that is, the owner(s) who is (are) recorded as such in respect of those designated State(s) and those goods and/or services for which the change in ownership is recorded. The provision means that whenever there is a reference in the Treaty or the Regulations to "the owner of the international registration" and, because of a partial change of ownership, an international registration has two or more owners, the expression shall be construed as referring to the earlier owner as far as the international registration concerns States and goods (and/or services) in respect of which he is still the owner, and it shall be construed as referring to the new owner(s) as far as the international registration concerns States and goods (and/or services) in respect of which the new owner(s) has (have) become owner(s). Consequently, any demand for renewal, any request for limitation of the goods and/or services, any request for recording further changes in ownership (subject to the latter part of Article 14(1)(c)), any appointment of a (new) representative, any withdrawal relating to the designated States and to the goods (and/or services) in respect of which the earlier owner remains owner or the new owner becomes owner will have to be signed by and will become effective in respect of the earlier owner only or the new owner only, as the case may be. However, any later designation of a State not yet designated in the international registration may be the subject of a request for recording by any of the owners. Furthermore, any notification or any refusal under Article 12 will be effective in respect to all the owners who are owners in respect of the State from which the said notification or refusal issues. The same is true in respect of any decision of cancellation where the cancellation proceedings started before the change in ownership.

ad (v): The reference to *certification marks* and *collective marks* is placed between brackets because views in the May 1972 Committee of Experts were divided on the question whether such marks should be registrable under the TRT or not. The main argument for making them registrable is that certification and collective marks are frequently used in international trade so that international facilities for their registration are preeminently desirable. The main argument against opening the "TRT route" to certification and collective marks is that national laws usually require more time to examine more evidence than in the case of "ordinary" marks and that the procedures of the TRT are not suitable for accommodating such evidence and time limits. Nevertheless, an attempt is made in this Draft to make such accommodations: see Article 12(2)(a)(i) as to the time limit and Article 18(6) as to evidence.

ad (vi): It is to be noted that, whereas in the expression "national mark" the word "national" does not include "regional," the word "national" does include "regional" in the expressions "national Office," "national register of marks," and "national law" (see items (xiii), (xiv) and (xvi)).

ad (x): As to the *Gazette*, see Rule 35 (The Gazette).

It goes without saying that, as is usual in legislative texts, the singular stands also for the plural and masculine pronouns stand also for feminine and neuter pronouns, wherever appropriate.

CHAPTER I: SUBSTANTIVE PROVISIONS

ARTICLE 3

International Registrations and International Applications

(1) The International Bureau shall register marks in the International Register of Marks according to the provisions of this Treaty and the Regulations.

(2) International registrations shall be effected on the basis of international applications.

COMMENTS ON ARTICLE 3

Paragraph (1): See Rule 3 (The International Register of Marks).

"Mark" is defined in Article 2(v).

"International Bureau" is defined in Article 2(xxi).

"Regulations" is defined in Article 2(xxiv).

Paragraph (2): See Article 4 (Right To File International Applications and To Own International Registrations) and Article 5 (The International Application).

"International registration" is defined in Article 2(i).

"International application" is defined in Article 2(ii).

ARTICLE 4

Right To File International Applications and To Own International Registrations

(1) Any resident or national of a Contracting State may file international applications and may own international registrations.

(2)(a) Any natural person shall be regarded as a resident of a Contracting State if:

(i) according to the national law of that State, he is a resident of that State, or

(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that State.

(3)(a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.

(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.

(4) If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.

[(5) Where under the national law of any Contracting State an association of natural persons or legal entities may own marks notwithstanding the fact that it is not a legal entity, it shall be entitled to file international applications and to own international registrations, provided it is a resident or national of that State within the meaning of paragraph (3).]

[(6) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, an international application may be filed only if the mark that is the subject of the international application is, at the time of the filing of that application, the subject of an application for registration or is registered, in the name of the said applicant, in the national register of marks of that State in respect of at least those goods and/or services listed in the international application.]

COMMENTS ON ARTICLE 4

Paragraph (1): See Article 5 (The International Application) and the comments thereon, as well as Rule 4 (Applicants: Owners of International Registrations).

According to Rule 5.2 (Indications Concerning the Applicant), the international application must indicate the nationality and the residence of the applicant. The International Bureau will not examine whether these allegations are true. It is not, and could not reasonably be expected to be, equipped to do so. Whether a person is the national of a State or not,

or the resident of a State or not, is a question which the national laws answer differently, and sometimes not very clearly, particularly in the case of dual nationality. Which law should the International Bureau follow? Thus, the question whether the applicant's allegation is true can be raised only before the national Office or other authorities of each designated State. If the allegation is held to be false, the effect of the Treaty on the protection of the mark can be refused or cancelled by such Office or authority on the ground that it was obtained by fraud or by virtue of some other reasoning compatible with the national law of the particular State.

If paragraph (6) is retained, any Contracting State could disallow the filing of an international application by any person who is both a resident and a national of that State if the mark that is the subject of the international application has not previously been the subject of an application for registration in the national register of marks of that State for the purposes of at least those goods and/or services listed in the international application.

Paragraphs (2) and (3): These provisions are based on the concepts used in the Paris Convention, which grants national treatment to "nationals of any country of the Union" (Paris Convention, Article 2(1)) and assimilates to such nationals those "who are domiciled or who have real and effective industrial or commercial establishments in the territory of one of the countries of the Union" (Paris Convention, Article 3). "National law" is defined in Article 2(xvi).

Paragraph (3): Supranational companies are entitled to file international applications and to own international registrations if they have a real and effective industrial establishment in at least one of the Contracting States (subparagraph (a)).

Paragraph (4): This provision means that it is not necessary that the applicant or owner should have both the nationality of and residence in a Contracting State: compliance with one of these criteria is sufficient.

Paragraph (5): This paragraph is placed between brackets since there was no agreement in the preparatory discussions on the question whether it should be inserted or omitted.

Paragraph (8): The records of none of the preparatory meetings contain any indications as to what the arguments *for* such a provision would be. As to arguments *against* it, the report of the October 1971 Committee of Experts states that, without this provision, "the procedure would be uniform and more simple, and discrimination by any country against its own residents would be precluded" (TRT/I/11, paragraph 49). If the provision is retained, the question arises whether non-compliance with it should be sanctioned in the Treaty and, if so, how. If any such sanction had to be provided for, one would have to add to the requirements for international applications (Article 5(1)(a)) the stipulation that international applications filed by a person who is both a national and a resident of a Contracting State making use of the faculty in question must be accompanied by an attestation by the national Office of such State to the effect that a national application has been filed in that State; issuance of the attestation would have to be preceded by a comparison—by the national Office—between the mark and the lists of the goods and/or services appearing (in some cases, in different languages) in the national application and those appearing in the intended international application. Furthermore, the lack of such attestation would have to be included among the grounds (Article 7(2)) for which the international registration would have to be declined by the International Bureau. Such procedures would appear to be complicated. It is for this reason that the Treaty contains no sanction, the matter being left to the national law of the State of which the applicant is a resident and a national.

ARTICLE 5

The International Application

(1)(a) The international application shall contain, as specified in this Treaty and the Regulations:

(i) an indication that it is filed under this Treaty,

(ii) indications concerning the applicant's identity, residence, nationality, and address,

(iii) a reproduction of the mark,

(iv) a list of goods and/or services in which the terms are grouped under the applicable classes of the International Classification and in which each term is comprehensible, permits classification in one class only of that Classification, and, as far as possible, is one that appears in the alphabetical list of goods and/or services of the said Classification,

(v) the identification of the designated State or States,

(vi) in respect of any designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for an registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

** [(vii) in respect of any designated State in which the effects provided for in this Treaty are desired as for a certification mark or a collective mark, an indication to that effect].

(b) The international application may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(2) International applications shall be filed direct with the International Bureau.

*[(3)(a) Notwithstanding paragraph (2) but subject to subparagraph (c), the national law of any Contracting State may provide that international applications of residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the international application is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the international application the date on which it received that application and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

(c) Any Contracting State on whose territory an agency of the International Bureau, established under Article 30(2)(a)(ix), is functioning shall, at least for the time such agency functions, suspend the application of any provision of its national law referred to in subparagraph (a) and Article 6(3)(a).]

[(4) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, such State may be designated only if, at the time of the filing of the international application, the mark that is the subject of the international application is registered, in the name of the said applicant, in the national register of marks of the said State or, with effect in that State, in the international register under the Madrid Agreement, in respect of at least those goods and/or services listed in the international application.]

COMMENTS ON ARTICLE 5

Paragraph (1)(a), introductory phrase: See Rule 5 (Mandatory Contents of the International Application).

Paragraph (1)(a)(i): See Rule 5.1 (Indication that the International Application is Filed Under the Treaty).

Paragraph (1)(a)(ii): See Rule 5.2 (Indications Concerning the Applicant). "Applicant" is defined in Article 2(iii).

Paragraph (1)(a)(iii): See Rule 5.3 (Reproduction of the Mark; Colors, Transliteration and Translation). Paragraph (g) of that Rule is placed between brackets since the May 1972 Committee of Experts did not reach any conclusion on the question whether or not it should be retained.

Paragraph (1)(a)(iv): See Rule 5.4 (List of Goods and/or Services). It is to be noted that non-compliance with any of the criteria specified in this item cannot be a ground for declining the international application or the request for the

recording of later designation. "International Classification" is defined in Article 2(xxiii).

Paragraph (1)(a)(v): See Rule 5.5 (Identification of States). The designation of one Contracting State is permitted. If paragraph (4) is retained, any Contracting State could disallow its designation by any applicant who is both a resident and a national of that State if, at the time of filing the international application, the mark that is the subject of the international application is not registered in the national register of marks of the said State for the purposes of at least those goods and/or services listed in the international application. "Designated State" is defined in Article 2(xii).

Paragraph (1)(a)(vi): See Rule 5.6 (Choice Between National and Regional Marks). "National mark" and "regional mark" are defined in Article 2(vi) and (vii), respectively. Where the applicant has no choice and can obtain only the effects of a regional mark, see Article 24.

Paragraph (1)(a)(vii): See Rule 5.7 (Certification and Collective Marks).

Paragraph (1)(b): As to the claiming of priority, see Rule 6.2 (Claiming of Priority). As to the effect of such claiming, see Article 26. "Earlier filings" could be applications under the Treaty (see Article 27) or under regional treaties (OAMPI, Benelux); if they are, at least one of the countries "for" which they were filed will have to be indicated.

The additional optional indications provided for in *other provisions of the Treaty* concern:

the choice of a certain national register (see Article 11(3), and Rule 6.5: Option Under Article 11(3)),
the declaration stating intent to use the mark in respect of any of the designated States (see Article 18(4), and Rule 6.3: Declaration of Intent To Use the Mark),
the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 20(2) and 21(2), Rule 6.4: Declarations Under Articles 20(2) and 21(2), and Rule 25: Declarations Concerning Earlier National or Madrid Registrations).

The additional optional indications provided for *in the Regulations* concern:

the appointment of a representative (see Rule 2: Duly Appointed Representatives, and Rule 6.1: Naming of a Representative),
the indication that the mark is a three-dimensional mark or a sound mark (see Rule 5.3(d)),
the indication of the trade or business of the applicant (see Rule 6.6: Trade or Business of the Applicant).

Paragraph (1)(c): As to *language*, see Rule 7.1 (Language of the International Application).

As to *form*, see Rule 8.1 (Printed Forms).

As to *fees*, see Rule 9 (Fees Payable With the Filing of the International Application), as well as Article 17 (Fees) and Rule 28 (Payment of Fees). Rule 9.3 is placed within brackets. The fees therein referred to are fees whose non-payment has no legal consequences. In view of this fact, the obligation to pay them seems to be illusory and it might be more realistic to omit Rule 9.3.

As to *signature*, see Rule 8.2 (Copies; Signature). The international application may be signed by the applicant's duly appointed representative (see Article 25(2), second sentence).

Paragraph (2): Filing may be made by deposit with the International Bureau or with any agency of that Bureau established according to Article 30(2)(a)(ix) (if and when such agency is established in a place other than Geneva, Switzerland), or through mailing to the said Bureau or such agency. See Rule 26 (Transmittal of Documents to the International Bureau).

If paragraph (3) is retained, it will constitute an exception to this paragraph.

Paragraphs (3) and (4): These paragraphs appear within brackets to indicate that opinions were divided in the May 1972 Committee of Experts on the question whether they should be included in the Treaty.

Paragraph (3): This paragraph, together with Articles 6(3), 7(1), 7(2)(viii), 7(6), 8(1), 8(2)(a), 27(2), 28(3) and 36(2)(b), as well as Rules 5.8, 10.3(a), 10.7, 14.4, 15.1 and 28.2(1), constitutes a system which, subject to one exception, permits applicants and owners of international registrations residing in a Contracting State whose national law so provides to file their international applications and requests for the recording of later designations not with the International Bureau in Geneva (Switzerland) but with their own national Offices and ensures that the international registration date and the recording date of the later designation will be the date on which the said application or request reached the national Office, provided it reaches the International Bureau (after being forwarded by the national Office) within one month (see Articles 7(1) and 8(1)). The exception is that this "indirect filing system" is not available where there is an agency of the International Bureau functioning on the territory of the said State (see paragraph (3)(c)).

To the extent that the listed provisions deal with this system, they are not only placed within brackets in the draft texts of the Treaty and the Regulations but the brackets are also preceded by an asterisk to facilitate the location of those provisions.

The main reason advanced in the May 1972 Committee of Experts for this "indirect filing system"—without the said exception—was that it would eliminate the disadvantage from which applicants and owners of international registrations may suffer if they reside in countries at a considerable distance from the place—Geneva—where filings must be effected if they are effected direct, the said disadvantage consisting of the fact that they would have to mail their applications and requests several days earlier than those living closer to Geneva in order to make them arrive on the same day as papers mailed from places close to Geneva.

The main arguments against the indirect filing system were: that it was unnecessary since the said difference in time would not be more than a week if air mail was used, and that was an insignificant difference; that national Offices would assume a great responsibility since any delay in forwarding the papers might make the applicant or owner lose the date on which he had a right to count; that it would probably make the procedure more expensive since it was unlikely that many national Offices would perform the service of forwarding without requiring the payment of a fee; finally, that it complicated and lengthened the Treaty and the Regulations.

A substitute solution for the indirect filing system could consist in providing that international applications may be sent by telegraph or teletypewriter and—where the mark has figurative elements—by telegraph facsimile, and the filing date would be the date of receipt of the telegram, teletype message or telegraph facsimile, provided that it is confirmed, within one month, by an application written on a regular form and signed by the applicant.

Another substitute solution could consist in merely stating *expressis verbis* something that is already implied, namely that, if an international application is sent by telegram, teletypewriter or telegraph facsimile and contains all the required elements except signature, it preserves its date if the missing signature is furnished within one month from the date of an invitation that the International Bureau must issue (see Article 7(3)).

In either of the two cases, the Treaty could provide, as an additional facility, that the date of receipt by the International Bureau of the telegram, teletype message or telegraph facsimile would be considered the filing date even if the fees were received later; provided that they were received within 30 days from the said date.

Paragraph (3)(a): Paragraph (2) provides that international applications must be filed direct with the International Bureau.

Article 6(3)(a) contains the same provisions as Article 5(3)(a) but in respect of requests for the recording of later designations. "National Office" is defined in Article 2(xiii).

Paragraph (3)(b): See Rule 5.8 (Applications Filed Through the Intermediary of a National Office). As to the time limit of one month which is allowed to elapse between the filing of the international application in the National Office and its arrival in the International Bureau, see Articles 7(1) and 28(3) and (4).

Paragraph (3)(c): Article 30(2)(a)(ix) provides that the Assembly may decide upon the establishment of any agency of the International Bureau outside Geneva for the purposes of receiving documents and payments under the Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva. A typical agency under such a provision would consist of one—frequently only part-time—employee who would receive the papers and, before forwarding them to Geneva, would make a copy of them (in case they were lost or delayed in the mail) and would report once or twice a week to the International

Bureau on the numbers of papers sent so that the latter could check whether they had actually been received. Such an agency could, of course, receive international applications and any other documents and any payments under the Treaty irrespective of the nationality or residence of the applicant or the owner of the international registration and therefore could, in practice, serve the residents not only of the State in which it is established but also, for example, of a whole region.

The exception constituted by this provision to the rule contained in Articles 5(3)(a) and 6(3)(a) is motivated by the fact that the residents of a State in which the International Bureau has an agency do not need the indirect filing system since the advantages that the latter would ensure are ensured—without any of the risks inherent in the need for respecting the one-month time limit—by the existence of an agency in that State.

Paragraph (4): The main argument used by those in the October 1971 Committee of Experts who wished to retain a provision very similar to that contained in this paragraph was that "some States might wish to prohibit the so-called self-designation" (TRT/I/11, paragraph 49). Those opposing it argued that, without such a provision, "the procedure would be uniform and more simple, and discrimination by any country against its own residents would be precluded" (*loc. cit.*). Even if the provision is maintained, possible non-compliance with it does not seem to require any sanction in the Treaty since the simplest and most effective sanction would consist in refusing the effects provided for in Article 11 by the national Office of the self-designated State. "Madrid Agreement" is defined in Article 2(xvii).

ARTICLE 6

Later Designation

(1) Any Contracting State not designated in the international application or whose designation has ceased to have the effects provided for in Article 11 may be designated by the applicant or, once the international registration has been effected, by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) Any later designation shall be the subject of a request for the recording of later designations. Several States may be designated in the same request. The request shall be filed direct with the International Bureau and shall contain, as specified in the Regulations:

(i) an indication that it is for the recording of later designations under this Treaty,
(ii) indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,
(iii) the identification of the international application or, where the international registration has already been effected, of such registration,
(iv) the identification of the later designated State or States,
(v) in respect of any later designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,
** [(vi) in respect of any later designated State in which the effects provided for in this Treaty are desired as for a certification mark or a collective mark, an indication to that effect].

(b) The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the request may contain in respect of any State designated therein a list of goods and/or services, provided that, if that list is different from the list of goods and/or services included in the international registration as published or, if the international registration has not yet been published, from the list of goods and/or services included in the international application after any limitation under Article 7(4), it shall conform with the concept of limitation as defined in the Regulations. Finally, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

* [(3)(a) Notwithstanding the provisions of paragraph (2)(a) but subject to Article 5(3)(c), the national law of any Contracting State may provide that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the request for the recording of later designations is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the request the date on which it received that request and shall promptly transmit the same to the International Bureau, as provided in the Regulations.]

[(4) The national law of any Contracting State may provide that, where the applicant or the owner of the international registration is both a resident and a national of that State, such State may be designated only if, at the time of the filing of the request, the mark that is the subject of the request is registered, in the name of the said applicant or owner, in the national register of marks of the said State or, with effect in that State, in the international register under the Madrid Agreement, in respect of at least those goods and/or services to which the request refers.]

COMMENTS ON ARTICLE 6

Paragraph (1): Any later designation may relate not only to a State which was never designated but also to one whose designation ceased to have effect (because it was withdrawn, refused, cancelled or not renewed). Where it ceased to have effect because of refusal or cancellation, such designation would generally make sense only if the reason for refusal or cancellation no longer existed. "Owner of the international registration" is defined in Article 2(iv).

Requests for recording later designations may be filed before or after international registration. They may relate to one or several Contracting States.

Paragraph (2)(a), introductory sentences: See Rule 10 (Mandatory Contents of the Request for Recording of Later Designations).

In connection with the word *request*, the following terminological pattern of the Draft may be noted: a petition for international registration is called an *application*, a petition for the recording of a later designation is called a *request*, a petition for renewal is called a *demand*; furthermore, only applications lead to *registration*, all other petitions lead to *recording*.

As to the word *direct*, see Rule 26 (Transmittal of Documents to the International Bureau); the transmittal of the request may consist in depositing with or mailing to the International Bureau or any agency thereof. See also paragraph (3).

As to the meaning of "recording," see Article 2(xi).

Paragraph (2)(a)(i): See Rule 10.1 (Indication that the Request is for Recording of Later Designations).

Paragraph (2)(a)(ii): See Rule 10.2 (Indications Concerning the Applicant or the Owner of the International Registration). The indication of the residence and nationality of the applicant or owner is necessary since between the time of the filing of the international application and the time of the filing of the request for recording later designations his residence or nationality may undergo changes which no longer allow him to own international registrations. His address may also have changed.

Paragraph (2)(a)(iii): See Rule 10.3 (Identification of the International Application or International Registration).

Paragraph (2)(a)(iv): See Rule 10.4 (Identification of the Later Designated State). See also paragraph (4).

Paragraph (2)(a)(v): See Rule 10.5 (Indication of the Choice Between National and Regional Marks).

Paragraph (2)(a)(vi): See Rule 10.6 (Certification and Collective Marks).

Paragraph (2)(b): As to the claiming of priority, see Rule 11.1 (Claiming of Priority) and the comments on Article 5(1)(b).

As to the possibility of presenting a more limited list of goods and/or services in respect of any later designated State than the list appearing in the international registration, etc., see Rule 11.4 (List of Goods and/or Services).

The additional optional indications provided for in *other provisions of the Treaty concern:*

the choice of a certain national register (see Article 11(3), and Rule 11.5: Option Under Article 11(3)),

the declaration of intent to use the mark in respect of the designated State (see Article 18(4), and Rule 11.2: Declaration of Intent To Use the Mark),

the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 20(2) and 21(2), Rule 11.3: Declarations Under Articles 20(2) and 21(2), and Rule 25: Declarations Concerning Earlier National or Madrid Registrations).

Paragraph (2)(c): As to *language,* see Rule 7.2 (Language of the Request for Recording of Later Designations).

As to *form,* see Rule 12 (Form of the Request for Recording of Later Designations).

As to *fees,* see Rule 13 (Fees Payable With the Request for Recording of Later Designations), as well as Article 17 (Fees) and Rule 28 (Payment of Fees).

As to *signature,* see Rule 12.2 (Copies; Signature). The request may be signed by the duly appointed representative (see Article 25(2), second sentence).

Paragraph (3): See the comments on Article 5(3).

Paragraph (4): See the comments on Article 5(4).

ARTICLE 7

International Registration or Declining of the International Application

(1) [*No Defects*] Subject to paragraphs (2) to (5), the International Bureau shall promptly effect the international registration as applied for, and the date under which such registration shall be effected ("international registration date") shall be the date on which the international application was received by the International Bureau *[or, in the case of an international application filed through the intermediary of a national Office under Article 5(3), the date on which it was received by that Office provided that the said application is received by the International Bureau before the expiration of one month from that date].

(2) [*Defects Which Necessarily Entail a Later Registration Date*]

(a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the international application does not contain an indication that it is filed under this Treaty,

(ii) the international application is in a language other than one of the prescribed languages,

(iii) the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,

(iv) the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,

(v) the international application does not include the reproduction of the mark,

(vi) the international application does not contain a list of goods and/or services,

(vii) the international application does not designate any Contracting State,

(viii) no fees have been received by the International Bureau on or before the date on which the international application is received by that Bureau *[or, where the international application is filed through the intermediary of a national Office under Article 5(3), no fees have been received by the International Bureau within one month from the date on which that Office received the international application],

(ix) the amount of the fees received by the International Bureau by the date referred to in item (viii) does not attain the amount ("minimum amount") fixed in the Regulations,

it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau has received the international application, the International Bureau shall decline that application.

(c) If the defect is corrected within the time limit referred to in subparagraph (b) and unless the international application is declined under paragraph (3)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau receives the required correction or the prescribed amount of the fees, unless a later date is applicable under paragraph (3)(d).

(3) [*Defects Which Do Not Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the amount of the fees received by the International Bureau by the date referred to in paragraph (2)(a)(viii) is less than the amount prescribed but attains the minimum amount,

(ii) the international application does not contain, in respect of any designated State to which Article 5(1)(a)(vi) applies, the indication of the choice referred to in the said provision,

(iii) the international application is not signed,

it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau has received the international application, the International Bureau shall decline that application or, if the only defect which is not corrected within the said time limit is the defect referred to in subparagraph (a)(ii), the International Bureau shall decline to record the State concerned as a designated State.

(c) If the defect is corrected before the expiration of one month from the date of the invitation referred to in subparagraph (a) and unless the international application is declined under subparagraph (b) or paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date referred to in paragraph (1), unless a later date is applicable under paragraph (2)(c).

(d) If the defect is corrected later than at the expiration of one month from the date of the invitation referred to in subparagraph (a) but earlier than at the expiration of three months from the date on which the International Bureau has received the international application, and unless the international application is declined under paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau receives the required correction or payment, unless a later date is applicable under paragraph (2)(c).

(4) [*Classification Causing Increase in Fees*] (a) Where the International Bureau finds that, by classifying any of the terms appearing in the list of goods and/or services in or also in a class or classes of the International Classification in which such term was not classified in the international application as filed, the amount of the fees required is higher than if that term had not been so classified, the invitation referred to in paragraph (2)(a) or (3)(a) shall contain appropriate explanations and shall indicate that the applicant may limit the list of goods and/or services.

(b) If, within three months from the date on which the International Bureau has received the international application, it receives from the applicant a statement which limits the list of goods and/or services in conformity with the concept of limitation as defined in the Regulations, the International Bureau shall modify the list of goods and/or services accordingly and, if such modification entails a change in the prescribed amount of the fees, such change shall be taken into account by the International Bureau in determining that amount and in applying paragraph (2)(b), (2)(c), (3)(b), (3)(c), or (3)(d), as the case may be.

(5) [*Details*] (a) The Regulations shall provide for the details of the procedure under paragraphs (1) to (4).

(b) Failure to send or receive any invitation referred to in paragraphs (2) to (4), or any delay in dispatching or receiving it, or any error therein, shall not extend the time limits fixed in those paragraphs and shall not affect any obligation to decline the international application.

(c) Where the international application is declined, the International Bureau shall reimburse to the applicant such amounts as are specified in the Regulations.

*[(6) [*Defects Peculiar to Indirect Filing*] Where the international application filed through the intermediary of a national Office under Article 5(3):

(i) does not indicate that the applicant is a resident of the State through the intermediary of whose national Office the international application was filed, or

(ii) does not contain a statement by the said national Office indicating the date on which that Office received the international application, or

(iii) contains the said statement indicating a date which precedes by more than one month the date on which the International Bureau receives the international application,

that application shall be treated as if it had been filed direct with the International Bureau on the date it reached that Bureau.]

COMMENTS ON ARTICLE 7

Generally: This Article mainly deals with the international registration, with the possible defects in the international application which may entail the declining of the international application, and with the possible defects in the international application as a consequence of which the international registration may not be effected under the date on which the international application was received but under the date on which the defect was remedied ("later-dating"). Insufficiency of fees is one of the possible "defects" in an international application.

Whereas paragraph (1) deals with the normal situation, namely, where there is no defect in the international application, the rest of the Article deals with abnormal situations.

It is to be noted that, where the International Bureau declines the international application or, more precisely, declines to give the status of an international application to what purports to be an international application and such declining is the result of an error by the International Bureau, the applicant may alert it to its error and the International Bureau may come back on its decision. But even if it perseveres in its error, all the consequences of that error can be avoided by making use of the possibilities offered to the applicant by Article 9 (Avoiding the Effects of Declining). Where the error of the International Bureau does not result in declining the international application but causes some other prejudice—for example, unjustified later-dating—and the International Bureau perseveres in its error, that prejudice, too, can be avoided by making use of the possibilities offered by Article 29 (Correction of Errors of the International Bureau).

Paragraph (1): As to the registration, see Rule 3.1 (Keeping of the Register).

As to the provision placed between brackets, see the comments on Article 5(3).

Paragraph (2)(a): These are defects so basic that as long as they are not corrected the papers called an "international application" do not really amount to one. That is why the international registration date cannot be the date on which the papers were received but only the date on which the defects were corrected ("later-dating").

Paragraph (2)(a)(i): See Article 5(1)(a)(i) and Rule 5.1 (Indication that the International Application is Filed Under the Treaty).

Paragraph (2)(a)(ii): See Article 5(1)(c) and Rule 7.1 (Language of the International Application).

Paragraph (2)(a)(iii): It is to be noted that the ground for declining as defined in this provision allows non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii) and Rule 5.2(b) require that both the nationality and the residence of the applicant be indicated, the international application may not be declined if one of them is missing and the existence of the other permits the conclusion that the applicant has the right to file international applications.

Paragraph (2)(a)(iv): It is to be noted that the ground for declining as defined in this provision permits non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii) requires that the applicant's address be indicated and Rule 5.2(c) defines the meaning of address, any indication that permits him to be reached by mail will prevent declining of the international application.

Paragraph (2)(a)(v): See Rule 5.3 (Reproduction of the Mark, etc.).

Paragraph (2)(a)(vi): See Rule 5.4 (List of Goods and/or Services). As to certain defects in the list, see the comments on paragraph (4).

Paragraph (2)(a)(vii): See Rule 5.5 (Identification of the Designated State or States).

Paragraph (2)(a)(viii): See Rule 9 (Fees Payable with the Filing of the International Application). As to the provision appearing between brackets, see the comments on Article 5(3).

Paragraph(2)(a)(ix): See Rule 14.2 (Minimum Amount Under Article 7).

Paragraph (2)(a), last nine words: See Rule 14.1 (Invitations Under Article 7).

It is to be noted that certain imperfections in the international application are not sanctioned by declining the application. For example, where the requirement that the reproduction of certain marks must be accompanied by a transliteration or translation (Rule 5.3: . . . Transliteration and Translation), is not respected or where the requirement that goods and/or services must be grouped according to the classes of the International Classification (Rule 5.4: List of Goods and/or Services) is not respected, the International Bureau will itself proceed with the transliteration, translation or grouping (see the cited Rules).

Another example is that, although the applicant is supposed to use a printed form (see Rule 8.1: Printed Forms), there is no legal consequence if he does not do so.

Paragraph (2)(b): As to the procedure, see the comments on paragraph (5).

Parargraph (2)(c): This is one of the cases of "later-dating." Paragraph (3)(d) is another case of "later-dating," whereas paragraph (3)(b) deals with a case of declining.

Paragraph (3)(a): These are defects which, if corrected within a certain period of time, will not cause "later-dating."

Paragraph (3)(a)(i): The date referred to in paragraph (2)(a)(viii) is the date on which the International Bureau receives the international application or, where the application is filed through the intermediary of a national Office, the date is one month after that on which that Office received the application. As to the minimum amount, see Rule 14.2 (Minimum Amount Under Article 7).

Paragraph (3)(a)(ii): The choice referred to in Article 5(1)(a)(vi) is a choice between the effects of a regional mark and those of a national mark. See Rule 5.6 (Indication of the Choice Between National and Regional Marks).

Paragraph (3)(a)(iii): See Article 5(1)(c) and Rule 8.2 (Copies; Signature).

Paragraph (3)(a), last nine words: See Rule 14.1 (Invitations Under Article 7).

Paragraph (3)(b): As to procedure, see the comments on paragraph (5).

It is to be noted that, where the only defect is the defect referred to in subparagraph (a)(ii) and it concerns some only of the designated States, the international registration shall be effected but only in respect of the other designated States.

Paragraph (3)(c): This is a case where the international registration date will be the same as if the international application had contained no defect, and will therefore, in the case of direct filing, be the date on which the international application was received by the International Bureau (see paragraph (1)).

Paragraph (3)(d): This is one of the cases of "later-dating." Paragraph (2)(c) is another case of "later-dating," whereas paragraph (2)(b) deals with a case of declining.

Paragraph (4): According to Article 5(1)(a)(iv), the international application must contain a list of goods and/or services and in that list

(i) the terms must be grouped under the applicable classes of the International Classification,
(ii) each term must be comprehensible,
(iii) each term must permit classification in one class only of the International Classification,
(iv) each term must, as far as possible, be one which appears in the alphabetical list of goods and/or services of the International Classification.

If the international application contains no list at all, it will be declined unless a list is furnished within three months (see Article 7(2)(a)(vi), (b) and (c)).

If the terms are not grouped according to the International Classification or if any term is not shown under the class to which it belongs, the International Bureau will, after giving the applicant an opportunity to question its (the Bureau's) opinion, proceed with the grouping or the proper classification, as the case may be (see Rule 5.4(b)). Such an operation may or may not cause the paid amount of fees to be insufficient. If the amount of the fees is insufficient and if the difference is paid up within a certain time limit, the international registration will be effected without "later-dating" (see paragraphs (3)(b) and (4)(c)); if it is paid up within another time limit, it will be effected with "later-dating" (see paragraphs (2)(c), (3)(d) and (4)(b)); if it is not paid up within the latter time limit, the international application will be declined (see paragraphs (2)(b), (3)(b), (4)(b)), provided, however, that the applicant may, instead of paying the difference, choose to limit the list and, where such limitation reduces the difference in the fees, the limitation will have the same effect as if the difference had been paid (see paragraph (4)(b)).

If any term is incomprehensible, and if the International Bureau maintains that it is incomprehensible even after an explication between the International Bureau and the applicant, it will be left in the class or classes in which it was indicated in the international application (see Rule 5.4(b)). If in respect of any incomprehensible term no class was indicated in the international application, it will be classified in all classes of the International Classification (see Rule 5.4(b)); such classification may result in the procedure and consequences described in the preceding paragraph.

If any term does not permit classification in one class only of the International Classification, it will be classified in each of the applicable classes (Rule 5.4 (b)); such classification may result in the procedure and consequences described in the paragraph before the preceding paragraph.

If any of the terms is not a term appearing in the alphabetical list of goods and/or services of the International Classification, this fact will have no legal consequences except where the term is incomprehensible, in which case it will be treated as described in the paragraph before the preceding paragraph.

Paragraph (4)(a): See the comments on paragraph (4), above.

Paragraph (4)(b): See the comments on paragraph (4), above.

Paragraph (5)(a): See Rule 14 (Defects in the International Application).

Paragraph (5)(b): This provision means that, even where the invitation to correct a defect which causes the declining or the "later-dating" of the international application is not sent or is sent later than it should, or is not received or is received later than it should, or is not correct, the declining or "later-dating" will issue. The invitation to correct is, in fact, regarded as assistance to the applicant but not an assistance the lack of which could excuse defects for which the applicant alone is responsible. However, there is no reason to believe that the assistance will not be forthcoming or that it will not be forthcoming in time or that it will be incorrect.

Paragraph (5)(c): See Rule 14.3 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)).

Paragraph (6): This provision deals with certain possible defects connected with indirect filing; the consequence of such defects will invariably be "later-dating" and never declining.

Paragraph (6)(i): See Article 5(3)(a), which allows filing through the intermediary of a national Office only to residents of the State whose national Office is the forwarding Office.

Paragraph (6)(ii): See Article 5(3)(b), which requires the indication of the date in question.

Paragraph (6)(iii): See the proviso of the text appearing within brackets in Article 7(1) ("provided that the said application is received by the International Bureau within one month from that date [i.e., the date on which it was received by the said Office]").

Paragraph (6), last twenty-three words: This provision means that, if the indirect filing suffers from any of the three defects described in items (i) to (iii), the only consequence will be "later-dating." In other words, these defects can never result in declining.

ARTICLE 8

Recording or Declining of Later Designations

(1) Subject to paragraph (2), the International Bureau shall promptly effect the recording of any later designation as requested, and the date under which such recording shall be effected ("recording date of the later designation") shall be the date on which the request for the recording of the later designation was received by the International Bureau * [or, in the case of a request filed through the intermediary of a national Office under Article 6(3), the date on which it was received by that Office provided that the said request is received by the International Bureau before the expiration of one month from that date].

(2)(a) The provisions of Article 7(2) to (6) shall apply, *mutatis mutandis,* to the recording of later designations and declining of requests for the recording of later designations, provided that, once the international registration has been effected, any reference to the applicant shall be considered a reference to the owner of the international registration.

(b) Notwithstanding subparagraph (a), items (v) and (vi) of Article 7(2)(a) shall be considered to have been replaced by the following:

"(v) the request does not identify the international application or, once the international registration has been effected, such registration."

(c) Notwithstanding subparagraph (a), Article 7(3)(a) shall be considered to have been completed by the following:

"(iv) any list of goods and/or services contained in the request does not conform with the requirements of Article 6(2)(b), second sentence."

COMMENTS ON ARTICLE 8

Generally: This Article mainly deals with the recording of later designations, with the possible defects in the request for the recording of later designations ("request") which may entail the declining of the request, and with the possible defects in the request as a consequence of which the recording

of the later designation may not be effected under the date on which the request was received but under that on which the defect was remedied ("later-dating"). Insufficiency of fees is one of the possible "defects" in a request.

In its results, the Article parallels Article 7, which deals with the same questions as far as the international application is concerned. Consequently, the comments made under Article 7 apply also to this Article, subject to the following observations.

Paragraph (1): This paragraph deals with the normal situation, namely, where there is no defect in the request.

As to recording, see Rule 3.1 (Keeping of the Register).

As to the provision placed between brackets, see the comments on Article 5(3).

Paragraph (2)(a): As to Article 7(2) to (6), see the comments under those provisions.

Paragraph (2)(b): Among the grounds which always cause "later-dating" and may cause declining in the case of international applications, there are two which are inapplicable in the case of requests.

One is contained in Article 7(2)(v) and is the case where the international application does not include the reproduction of a mark; since a request necessarily relates to an international application or international registration in which the mark is already identified, this provision is replaced by one which requires that the request identify the said application or registration.

The other is contained in Article 7(2)(vi) and is the case where the international application does not contain a list of goods and/or services. The request does not have to contain such a list and, if it does not, the list contained in the international registration as first published or, if not yet published, that contained in the international application shall apply also to the States designated in the request. The request may, however, contain a list but, if it is different from the said "original" list, it must conform with the concept of limitation. That concept is defined in Rule 22.2 (Concept of Limitation). If non-compliance with this requirement is corrected within one month from the date of the invitation to correct, "later-dating" will be avoided. If corrected later but before the expiration of three months from the date of the filing of the request, it will cause "later-dating." Failure to correct will cause declining. All of this results from Article 8(2)(c).

Paragraph (2)(c): See the third paragraph of the comments on paragraph (2)(b).

ARTICLE 9

Avoiding the Effects of Declining

(1) Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within two months from the date of the notification of the declining, file with the national Office of any State designated in the declined international application or declined request:

(i) a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, where the international application was declined, with the international registration and the recording of the designation of the said State or, where the request for the recording of the later designation was declined, with the recording of the designation of that State, or

(ii) an application for the registration, in the national register of marks ("national application"), of the mark that is the subject of the declined international application or declined request, in respect of all or some of the goods and/or services indicated in the said international application or the said request, such application complying with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks.

(2) If the national Office or any other competent authority of the said State finds that the declining, by the International Bureau, of the international application or of the request for the recording of the later designation of that State was unjustified under this Treaty or the Regulations, or that the declining was based on the fact that there was a delay in meeting a time limit which must be excused by virtue of Article 28(1), then:

(i) where a petition has been filed under paragraph (1)(i), the said national Office shall request the International Bureau to proceed as provided in that paragraph, and the International Bureau shall proceed as requested, and the international registration date or the recording date of the later designation shall be the same as if the declining had not taken place,

(ii) where a national application has been filed under paragraph (1)(ii), that application shall, provided it complies with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks, be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

(3) The applicant or owner of the international registration who files a petition under paragraph (1)(i) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

COMMENTS ON ARTICLE 9

Paragraph (1): This paragraph provides for a choice between two possibilities of avoiding the effects of any error by the International Bureau resulting in the declining of the international application or of the request for the recording of a later designation. The choice lies with the applicant (or the owner of the international registration), and the decision on the question whether the International Bureau has erred or not rests with the national Office of any designated State. The applicant or owner may either ask the designated Office to request the International Bureau to proceed, in respect of the State of that Office, with the international registration or the recording of the later designation (item (i)), or, alternatively, he may ask for his mark to be registered in the national register of marks of the said State (item (ii)), and, if the designated Office finds that the International Bureau has made an error, the applicant's or owner's request will be fulfilled and the effective date of the registration or recording will be the same as if the error had not occurred (see paragraph (2)). Thus the Treaty provides for complete guarantees against any error made by the International Bureau in declining an international application or a request for the recording of a later designation. Guarantees against errors by the International Bureau in respects other than the said erroneous declining are provided for in Article 29.

See Rule 16.2 (Information Available to National Offices) and Rule 16.3 (Information Furnished by the National Office).

Paragraph (2): See the comments on paragraph (1), above.

Paragraph (3): See Rule 16.1 (Recording and Publication Under Article 9(3)).

ARTICLE 10

Publication and Notification

(1) International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.

COMMENTS ON ARTICLE 10

Paragraph (1): The publication will be effected in the Gazette of the International Bureau, since Article 2(ix) provides that "references to any publication by the International Bureau shall be construed as references to publications effected in the official Gazette of that Bureau."

As to the contents of the publication, see Rule 17.1 (Contents of Publication of International Registrations) and Rule 17.2 (Contents of Publication of Recordings of Later Designations). The publication will be effected in English and French (see Rule 34.3: Languages of the Gazette), normally within between ten and twenty days from the international registration date if it is assumed that preparations for the registration and publication will last approximately ten days and if it is considered that the Gazette will be weekly (see Rule 35.2: Frequency of Issue of the Gazette).

The Regulations contain no provision on the question whether the registration of a mark relating to goods and/or services belonging to several classes of the Nice Classification should be published as one item or as many items as there are classes. The matter will be regulated in the Aministrative Instructions. The present intention is to proceed as follows. The Gazette will have a separate section for each class of the Nice Classification. Each registration which relates to one class only will be published in the section corresponding to that class. Where any registration relates to several classes it will be published in the section corresponding to that class which has the lowest number among the said classes, whereas in each other relevant section merely the international registration number or international later designation number, a reproduction of the mark, and the page number of the Gazette on which the registration appears will be mentioned. The same principle would apply also to the publication of the recording of later designations.

As to access to information through other means than the Gazette, see Rule 36 (Copies and Other Information Available to the Public).

Paragraph (2): See Rule 18 (Notification of International Registrations and Recordings of Later Designations), according to which the notification will essentially consist of a reprint of the relevant passages in the Gazette. However, where the international application or the request for the recording of the later designation contains a declaration of intent to use the mark, the notification to the interested designated Office will also include a copy in full of that application or request (see Rule 18.1(iii)).

ARTICLE 11

Effects of International Registration and of Recording of Later Designation

(1) [*National Application Effect*] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(i), at the expiration of the said time limit or on such earlier date as may be prescribed by the national law of that State,

(ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(i), if and when, and to the extent to which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

(3) [*Several National Registers*] Where, in any designated State, there is more than one national register of marks, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register which affords the highest degree of protection, unless another register is indicated in the international application or the request for the recording of the later designation. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register so indicated.

COMMENTS ON ARTICLE 11

Paragraphs (1) and (2): These two paragraphs state the two effects of the international registration: the first is the same as that of national filing, the second is the same as that of national registration. In these comments, the first will sometimes be referred to as the *"national application effect* (of the international application)," and the second as the *"national registration effect* (of the international registration)."

These indications appear also at the beginning of the paragraphs, in brackets, as a sort of title. Neither these nor any other such paragraph titles are intended to remain in the text of the Treaty beyond the draft stages. "National register of marks" is defined in Article 2(xiv).

Paragraph (1): The national application effect comes into existence as of the international registration date, which is generally the date on which the international application was received by the International Bureau (see Article 7(1)) or, in the case of a later designation, as of the recording date of the later designation, which generally is the date on which the request for recording the later designation is received by the International Bureau (see Article 8(1)).

In essence, this paragraph provides that an international registration has the same effect as a national application. It should be noted that it contains no provision attempting to harmonize the effects attached to national applications under the various national laws. Consequently, each State's national law will continue to be completely free in this respect. Whatever effect is provided for national applications will be applicable under this paragraph to international registrations.

Paragraph (2): This provision, together with the provision on renewals, is the most important one of the Treaty. The Treaty is being concluded for the very reason that a single (international) registration should be able to take the place of the separate (national) registrations in each of those States in which the owner of the mark is interested in obtaining protection. This is the provision which accomplishes the desired aim.

The provision means that the effect of the international registration in each designated State (whether designated in the international application or later) is the same as that of the registration of the same mark, for the same goods and/or services, in the national register of marks of that State ("national registration effect").

It should be noted that neither this provision nor any other provision of the Treaty attempts to harmonize the effects attached to national registration under the various national laws. Consequently, each State's national law will be free to provide the effects it desires to provide for national registration and whatever effect is so provided will be applicable under this paragraph to international registrations. One of the examples of the freedom of national laws is that no given time limit has necessarily to be computed from the date of registration; thus, for example, any requirement of the national law concerning incontestability or the use of the mark may run from any point in time (subject, of course, as far as use is concerned, to respecting Article 18(3)), but any time limit or right which, according to the national law, runs from the national registration date (as distinguished from national

filing), will run from the international registration date unless the Treaty provides for exceptions or a different system. (For the sake of simplicity, the comments on this paragraph speak only of the international registration date; however, the expression should always be understood as including also the recording date of the later designation when the designation has not been made in the international application but in a later request.)

Furthermore, it should be noted that protection cannot be acquired, through international registration, in a designated State for marks which are unregistrable in the national register of that State, for example, service marks, three-dimensional marks or sound marks in States in which service marks, three-dimensional marks or sound marks are not registrable. If such a State is designated, its authorities should use the right of refusal given to it by Article 12; but, even if they fail to refuse, the designation will have the same effect as that of a national registration made in error (i.e., in most cases, none).

Finally, it should be noted that the fact that the effect, once acquired, is the same as that of a national registration implies that it can be taken away for the same reasons as those for which a national registration can be cancelled, for example, because it should never have been made (because accepting it for registration was contrary to the law), or because it has not been renewed, or because the mark is not being used when it should be. However, the Treaty provides for guarantees or alternative possibilities: cancellation must strictly follow the national treatment principle of the Paris Convention (see Article 13), renewal is to be effected internationally (see Article 16), and use generally cannot be required during an initial period, usually three years, after the international registration or the later designation (see Article 18(3)(a)).

As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b). Article 8(1) and, *mutatis mutandis*, Article 7(2)(c), (3)(c), (3)(d) and(4)(b) indicate what the "recording date of the later designation" is.

Paragraph (3): This paragraph is intended, in particular, to cover the situation existing in the United States of America, the United Kingdom, and a number of States following the UK system, namely, where there are two registers of marks ("Principal" and "Supplemental" in the United States of America or "Part A" and "Part B" in the United Kingdom). The provision leaves it to the discretion of the applicant or the owner of the international registration to decide whether, in the said examples, the national registration effect will relate to the Principal Register or to the Supplemental Register, or to the Part A Register or to the Part B Register. If the application or the request for recording of a later designation does not contain an indication that the Supplemental Register or the Part B Register is chosen, the effect will relate to the Principal Register or the Part A Register, since they afford a higher degree of protection than the Supplemental Register and the Part B Register. See Rule 6.5 (Option Under Article 11(3)) and Rule 11.5 (Option Under Article 11(3)).

ARTICLE 12

Refusal of the Effects Provided for in Article 11

(1) Subject to the provisions of paragraph (2) and Articles 18, 20(3) and 21(3), the effects provided for in Article 11 may, in respect of any designated State, be refused by the competent authorities of that State

(i) on the same grounds and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such grounds are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6*quinquies* of the Stockholm (1967) Act of the said Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6*quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications,

[(iii) on the ground that the designation of the said State was excluded under Article 5(4) or 6(4)].

(2)(a) Any refusal under paragraph (1) shall be effective only:

(i) if the refusal or notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 15 months ** [or, in the case of a certification mark or a collective mark, two years] from the date of the publication of the international registration, or, in the case of a later designation, of the publication of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the grounds for the refusal are specified, and provided, where such refusal is not final, that the grounds given in the final decision of refusal include at least one of the grounds specified in the said refusal and the final decision is or is also based on at least one of the grounds specified in the said refusal,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the grounds on which a refusal may eventually be pronounced, and provided that the grounds given in the final decision of refusal include at least one of the grounds specified in the said notice and the final decision is or is also based on at least one of the grounds specified in the said notice.

[(b) The proviso of subparagraph (a)(ii) and the proviso of subparagraph (a)(iii) shall not apply where the final decision is that of a court.]

(3)(a) The International Bureau shall, as provided in the Regulations, notify the owner of the international registration of any notification received under paragraph (2) and publish a notice concerning such notification.

(b) The owner of the international registration shall, with reasonable time limits, have in any designated State the same remedies against any decision of refusal and the same procedural and substantive rights in connection with any intended refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4)(a) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall notify the owner of the international registration, record the final decision, cancel the designation of that State, or, in a case where the final decision relates to some only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancellation.

(b) Where a refusal which is not final or a notice of possible refusal has been notified under paragraph (2) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly, and the International Bureau shall publish a corresponding notice.

(c) The details of the procedures referred to in subparagraphs (a) and (b) are provided in the Regulations.

COMMENTS ON ARTICLE 12

Paragraph (1)(i): This provision enunciates the principle according to which the "national application effect" and the "national registration effect" may not, on the basis of an international registration, materialize for the same reasons

as those for which the national registration of a mark applied for direct in the national Office cannot be granted.

The principle is qualified in three respects. *First*, the refusal must follow certain procedural requirements (see paragraph (2)). *Secondly*, the refusal cannot be in violation of Article 18, which provides for the non-applicability of certain national requirements generally or for a limited period of time. *Thirdly*, the national registration effect cannot be put, so to speak, in double jeopardy by exposing the mark to a new possibility of refusal when it has already been exposed to such possibility because the mark which is the subject of the international registration is no more and no less than a mark which is already in the national register or which is already in the other international register, namely, that maintained under the Madrid Agreement (see Article 20 (Preservation of Rights Acquired Through National Registration) and Article 21 (Preservation of Rights Acquired Through International Filing Under the Madrid Agreement)). The question that may arise is why a State in which the mark is already protected (by virtue of a national registration or by virtue of the Madrid Agreement) should be designated at all under the Treaty. The answer is that under the Treaty the surveillance of renewals is much simpler if not also much cheaper (see Article 16(2) and the comments accompanying Article 20(1)).

The grounds on which the refusal is based must not be incompatible with the provisions of the Treaty and the Regulations or of the Paris Convention. That they must not be incompatible with the Treaty and the Regulations is a matter of course. That they cannot be incompatible with the Paris Convention follows from the fact that only States members of the Paris Union may become party to the Treaty (see Article 37(1)). The reference to "the most recent provisions" means that, for example, if a State is bound by the administrative provisions of the Stockholm Act but not by its substantive provisions, and if it is also bound by the Lisbon Act, it will have to apply, in connection with the paragraph in question, the provisions of the Lisbon Act since the provisions that are applicable under that paragraph are substantive (rather than administrative) in nature. These matters are dealt with in the first proviso of the provision under consideration.

The second proviso provides that the refusal must also respect Article 6*quinquies* of the Stockholm Act of the Paris Convention. In this case, the mere reference to the Paris Convention would not suffice since the said Article refers to the notion of country of origin, and marks which are the subject of international registration do not have a country of origin when the international registration is not preceded by a registration in the national register of a country. Sections B and C of Article 6*quinquies* provide the reasons for which marks may be "denied registration" or may be "invalidated" (Section B) or may be "refused" (Section C). In the Draft Treaty's terminology, these acts are called refusals or cancellations (Articles 12 and 13). It is to be noted that any Contracting State could, in connection with international applications filed under the TRT, apply Article 6*quinquies* in the same way as it applies that Article in connection with national applications.

Paragraph (1)(ii): See Article 4 (Right To File International Applications and To Own International Registrations). This ground of refusal is expressly mentioned because national laws naturally do not deal with the question who is entitled to file international applications.

Paragraph (1)(iii): This provision is placed between brackets since it will only apply if Article 5(4)—which deals with the so-called self-designation—is retained.

Paragraph (2), generally: This paragraph specifies the procedural requirements which any refusal, to be effective under the Treaty, must satisfy. Roughly stated, it means that the refusal can generally be based only on such grounds as are notified—via the International Bureau—within a certain time limit, to the owner of the international registration. The notification is made *via* the International Bureau because it might be awkard, or even impossible from a legal viewpoint, for a national Office to send official communications to persons in foreign States. Naturally, this difficulty could be eliminated if the owner of the international registration were obliged to have a representative or at least an address for service in each of the designated States. However, this would always be costly for him and often completely unnecessary, especially where there is no dispute between him and the national Office. But, of course, if there is a refusal or notice of possible refusal, and the owner wants to defend his case, he will have to conform, from then on, to the national procedure, because he can only react direct, that is, not through the International Bureau. Consequently, he will have to use the remedies available under the national law in accordance with that law. This will necessitate a knowledge of the national law, the use of the official language of the national Office, and the practical if not the legal necessity of using the services of a local representative (attorney, agent, or other). See Article 18(7).

Where the address of the owner of the international registration is in the State which notifies the refusal or notice of possible refusal, the national Office could, if it so desired, send a copy of the notification to the owner. Such a copy may give the owner a few more days to react if he so desires.

Paragraph (2)(a)(i): See Rule 19.1 (Notifying the International Bureau; Grounds). For the definition of the date of publication, see Article 2(x).

For the case where the notification is made but the time limit is missed, see Rule 19.5 (Belated Notifications).

Paragraph (2)(a)(ii): See Rule 19.1 (Notifying the International Bureau; Grounds).

Paragraph (2)(a)(iii): See Rule 19.1 (Notifying the International Bureau; Grounds). For the definition of "final," see Article 2(viii).

Where the final decision is notified within the 15 months time limit, item (ii) rather than item (iii) is applicable as to the grounds of refusal.

Paragraph (2)(b): The rule expressed in subparagraphs (a)(ii) and (iii) is that the grounds specified in the final decision of refusal must include at least one of the grounds specified in the non-final refusal or in the notice of possible refusal, otherwise the notice could become a meaningless formality which would not give the applicant the required warning. However, the question arises whether it is practical to apply that rule to final decisions in court proceedings since courts may not wish to have their freedom of decision limited by any earlier administrative finding. This subparagraph would give them that freedom. Naturally, in almost all cases, the same result could be obtained without this subparagraph, by pronouncing the negative decision in the form of a cancellation rather than in the form of a refusal. The subparagraph is placed between brackets because views differed in the May 1972 Committee of Experts on the question whether it should be included in the Treaty.

Paragraph (3)(a): See Rule 19.2 (Notifying the Owner of the International Registration; Publication).

Paragraph (3)(b): "Reasonable time limits" should be understood as meaning that the owner of the international registration will, if he is diligent, have sufficient time for preparing and presenting his reaction to the notification.

Paragraph (4)(a): See Rule 19.3 (Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation).

Paragraph (4)(b): See Rule 19.4 (Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)).

Paragraph (4)(c): See the two Rules referred to in the preceding two paragraphs.

ARTICLE 13

Cancellation of the Effect Acquired Under Article 11(2)

(1)(a) Subject to Article 18, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of that State:

(i) on the same grounds, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that such grounds and such procedure are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6*quinquies* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of that Article, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications,

[(iii) on the ground that the designation of the said State was excluded under Article 5(4) or 6(4)].

(b) The competent authorities of the said State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in any cancellation proceeding and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the State in question.

(2) If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

COMMENTS ON ARTICLE 13

Paragraph (1)(a)(i): Since the international registration is a constructive national registration (see comments on Article 11(2)), it is logical that, once acquired, it should be capable of being taken away ("cancelled") for the same reasons as a "real" national registration. That is the principle enunciated in this provision. See also the comments on Article 12(1)(i).

Paragraph (1)(a)(ii): See Article 4 (Right To File International Applications and To Own International Registrations).

Paragraph (1)(a)(iii): This provision is placed between brackets since it will only apply if Article 5(4)—which deals with the so-called self-designation—is retained.

Paragraph (1)(b): This provision can be regarded as specifying for a special purpose—namely, for decisions of cancellation—the national treatment rule of the Paris Convention. It goes without saying that this provision does not apply in those cases in which, according to the national law, the omission of certain acts by such owner entails, *ipso facto*, cancellation of registrations.

Paragraph (2): This provision deals with the question how to inform all those concerned and the public at large of the fact that the designation of a State has failed because of a final decision of cancellation pronounced by the authorities of that State. See Rule 20.1 (Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation). As to the definition of "final," see Article 2(viii).

ARTICLE 14

Change in the Ownership of the International Registration

(1)(a) [*Total or Partial Change; Request; Recording*] Where the ownership of any international registration changes so that the new owner has become the owner in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services, the change in ownership shall, on request, subject to paragraph (4), be recorded by the International Bureau.

(b) [*Details of the Request*] The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the International Bureau of a change in ownership is requested,

(ii) the international registration number of the international registration,

(iii) indications concerning the name, residence, nationality and address of the new owner,

(iv) the identification of those of the designated States in respect of which the new owner has acquired ownership and the identification, in respect of each of those States, of those of the goods and/or services for which the new owner has acquired ownership.

(c) [*Signature*] The request shall be signed by the person who, pursuant to the change in ownership, ceases to own the international registration in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services ("earlier owner") or, where the earlier owner is unable to sign, by the new owner, provided that if it is signed by the new owner the request shall also contain an appropriate attestation, as provided in the Regulations, by the national Office of the Contracting State of which the earlier owner was, at the time of the change of ownership, a national or, if at that time the earlier owner was not a national of a Contracting State, by the national Office of the Contracting State of which, at the said time, the earlier owner was a resident.

(d) [*Fee; Publication; Notifications*] The request shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified by it to the earlier owner and the new owner and to the interested designated Offices, as provided in the Regulations.

(2) [*Declining of Request*] In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the person who has signed it:

(i) where the request does not contain the indication referred to in paragraph (1)(b)(i),

(ii) where the request does not contain the number referred to in paragraph (1)(b)(ii),

(iii) where the request contains no indications concerning the residence or nationality of the new owner, or only such indications as do not permit the conclusion that he is entitled to own international registrations,

(iv) where the request contains no indications concerning the identity and address of the person who has signed it or only such indications as do not permit him to be identified and reached by mail,

(v) where the request does not identify any designated State in respect of which the new owner has acquired ownership,

(vi) where the request does not identify, as provided in the Regulations, any goods and/or services in respect of each of the designated States for which the new owner has acquired ownership,

(vii) where the request is not signed and, if it is signed by the new owner, where it does not contain the attestation, as provided in the Regulations, referred to in paragraph (1)(c),

(viii) where the prescribed fee has not been received.

(3) [*Effect*] Subject to paragraph (2), any recording effected under paragraph (1) shall have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States to which the request relates.

(4)(a) [*Denial of Effect: Grounds*] Any designated State may, as far as it is concerned, deny the effect provided for in paragraph (3) on grounds which, according to its national law, do not allow of changes in ownership or on the ground that the new owner is not entitled to own international registrations.

(b) [*Same: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (3) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (1)(d), evidence is not adduced before its national Office which satisfies the conditions of the national law as regards changes in ownership.

(c) [*Same: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect provided for in paragraph (3), the national Office of that State

shall promptly notify the International Bureau accordingly, and that Bureau shall record the denial in the International Register of Marks and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

(5) [*Switchover to National Register Where an Owner Cannot Own International Registrations*] Where there is a change in ownership other than by contract between the earlier owner and the new owner, and where the new owner is a person who is not entitled to file international applications but is entitled under the national law of any designated State to file applications for the registration of marks in the national register of marks of that State, the new owner may file an application for the registration, in the said national register, of the mark which is registered, and in respect of all or some of the goods and/or services which are listed, in the International Register of Marks in respect of that State. If, within two years from the change in ownership and prior to six months after the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the new owner files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

COMMENTS ON ARTICLE 14

Paragraph (1)(a): The change in the ownership may have various causes. It may be caused by reason of a contract (typically, assignment) or by operation of law (for example, inheritance). The Treaty does not regulate, and the International Bureau will not examine, the question whether a change has really occurred, in particular whether the contract transferring the property is valid and the transferee capable of owning property. These questions are left to the national law of each Contracting State.

Paragraph (1)(b): See Rule 21.1 (Request for Recording of Change in Ownership).

Paragraph (1)(c): The attestation is provided for in Rule 21.1(e).

Paragraph (1)(d): As to the fee, see Rule 21.1(f).

As to publication, see Rule 21.2 (Publication Where the Change in Ownership is Total) and Rule 21.3 (Publication Where the Change in Ownership is Partial).

As to the notifications, see Rule 21.4 (Notification of Recording of Changes).

Paragraph (2): See Rule 21.5 (Notification of Declining of the Recording).

Paragraph (3): Paragraph (2) deals with the declining of the request.

Paragraph (4)(a): Paragraph (3) deals with the effect of the recording.

Paragraph (4)(b): Paragraph (3) deals with the effect of the recording. The publication referred to in paragraph (1)(d) is the publication of the recording.

Paragraph (4)(c): Paragraph (3) deals with the effect of the recording. As to the procedure, see Rule 21.6 (Denial).

Paragraph (5): It appears to be only logical that where the new owner is neither residing in nor a national of a Contracting State he should not be allowed to benefit from the Treaty. However, where the new owner acquired ownership by means other than by contract—for example, by inheritance—that is, by means over which he generally has no control, and where, under the national law of the designated State, he may own registrations, it would seem equitable to allow him to switch over to the national register. This is what the present provision is intended for.

ARTICLE 15

Limitation of the List of Goods and/or Services

(1) On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the concept of limitation as defined in the Regulations.

(2) The request for recording shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3) The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said concept of limitation, and shall notify the owner of the international registration accordingly, as provided in the Regulations.

(4) Where the national Office or other competent authority of any designated State finds that the limitation of the list of goods and/or services recorded in respect of that State is not admissible under the national law, the national Office of that State shall, as provided in the Regulations, notify the International Bureau accordingly, and that Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks, and restitute the situation in that Register and in relation to that State as if the request for recording had not been filed. The International Bureau shall, as provided in the Regulations, effect the corresponding notifications and publication.

COMMENTS ON ARTICLE 15

Paragraph (1): As to the request, see Rule 22.1 (Request for Recording of Limitation of List).

It is important that only such changes be recordable as are *true* limitations. If additions or such other changes were permitted as could be regarded as extending the list of goods and/or services, the designated Offices would have to be given a new opportunity to refuse the "national registration effect" since what was acceptable in respect of a certain list might well be unacceptable under a list of a broader scope. Re-opening the refusal procedure would be too complicated. If the owner wants to cover additional goods and/or services, he will have to apply for a new registration of the mark for those additional goods and/or services.

Deciding whether a limitation is a true limitation is not always easy if the limitation takes the form of substituting one term for another. That is why Rule 22.2 (Concept of Limitation) does not allow substitutions (and, obviously—even less so—additions) but only deletions and such qualifications of existing terms as are easy to recognize and can lead to nothing but a true limitation. A "term" may, of course, consist of several words (e.g., tropical fruits).

It is to be noted that no designated State is bound by any finding by the International Bureau that a requested limitation does not conform with the concept of limitation as defined in the Regulations. The competent authorities of such State have the right to disagree with the International Bureau and, consequently, may admit limitations which that Bureau has considered inadmissible or may decide not to admit limitations which it has considered admissible (see paragraph (4)).

Furthermore, where the national Office or other competent authority of any designated State has accepted a change in the list of the goods and/or services which does not conform with the provisions of Rule 22.2(a) and (b), the International Bureau will record such change. Naturally, such recording will relate to the said State only. See Rules 22.1(a)(v) and 22.2(c).

Limitation of the list of goods and/or services is also possible in combination with the request for recording later designation (see Article 6(2)(b), second sentence, and Rule 11.4). In this case, there is no need for a separate request and no fees for the limitation will be due.

Paragraph (2): As to the fee, see Rule 22.1(c).

As to procedure, see Rule 22.3 (Recording, Publication, and Notification, of Limitation of the List).

Paragraph (3): See Rule 22.4 (Declining the Recording of Limitation of the List.)

Paragraph (4): See Rule 22.5 (Non-Admission by Designated State). See also the last paragraph of the comments on paragraph (1).

ARTICLE 16

Term and Renewal of the International Registration

(1) The initial term of any international registration shall be ten years from the international registration date.

(2)(a) Any international registration may be renewed

in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effects provided for in Article 11 in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3)(a) Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The demand shall not be presented and the fees shall not be paid earlier than six months before, or later than six months after, the starting date of the term of renewal. If the demand is presented or the fees are received after the starting date of the term of renewal, renewal shall be subject to the payment of an additional fee ("renewal surcharge"), as provided in the Regulations, which shall be paid before the expiration of six months after the starting date of the term of renewal.

(b) The International Bureau shall record and publish the renewal and shall notify the owner of the international registration and each designated Office accordingly, as provided in the Regulations.

COMMENTS ON ARTICLE 16

Paragraph (1): As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b).

It goes without saying that any later designation becomes part of the international registration and thus renewal in respect of later designated States will be due at the same time as in respect of States designated in the international application itself. Consequently, for example, where the later designation took place four years after the international registration date, it will be effective only for the six remaining years of the initial term.

Paragraph (2)(a): This provision implies that the demand for renewal may relate to all or to one or some only of the designated States.

Paragraph (2)(b): This provision means that the "national application effect" and the "national registration effect" will continue. Compliance with the requirements of the national law of any designated State concerning renewals is neither required nor, indeed, possible.

Paragraph (2)(c): As to the computation of terms, see Rule 27.2 (Periods Expressed in Years, Months, or Days).

Paragraph (3)(a): The International Bureau will remind the owner of the international registration that the time for renewal is approaching (see Rule 23.1: Reminder by the International Bureau).

As to the form and contents of the demand, see Rule 23.2 (Demand for Renewal).

As to the fees, see Rule 23.3 (International Renewal Fees and Individual State Renewal Fees) and Rule 23.4 (Standard State Renewal Fees). The "renewal surcharge" is referred to in Rule 23.3(a)(i).

The International Bureau will, where appropriate, invite the owner of the international registration to correct the demand or to pay the (missing part of the) fees. See Rule 23.5 (Imperfect Demands).

Where the demand is presented or the fees are paid too early or too late or where the demand is imperfect or the fees not paid or not completely paid, the demand is declined and certain fees are reimbursed. See Rule 23.7 (Declining the Demand) and Rule 23.8 (Reimbursement of Certain Fees).

Paragraph (3)(b): As to the recording of the renewal and its notification to the owner of the international registration and each designated Office, see Rule 23.6 (Recording, Publication, and Notification). "Designated Office" is defined in Article 2(xv).

ARTICLE 17

Fees

(1) The International Bureau shall be entitled to fees in connection with the filing of each international application, request for the recording of later designations, demand for renewal, and such other operations and services as are subject, according to this Treaty or the Regulations, to the payment of fees.

(2) Each Contracting State shall be entitled to fees in connection with each designation and each renewal concerning it.

(3) The Regulations fix the amounts of the fees and provide for the total or partial reimbursement of certain fees in certain circumstances, and other details concerning fees payable under this Treaty and the Regulations.

COMMENTS ON ARTICLE 17

Paragraph (1): As to the fees to which the International Bureau is entitled in connection with the filing of the international application, see Rule 9.1 (International Application Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule; in connection with the request for the recording of later designations, see Rule 13.1 (International Later Designation Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule; in connection with the demand for renewal, see Rule 23.3 (International Renewal Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule; in connection with other operations and services, see Rule 9.3 (Fees Payable in Special Cases). See also the Table of Fees.

Paragraph (2): In connection with each designation concerning it, each State is entitled to either an individual State designation fee or to a standard State designation fee. See Rule 9.1 (. . . Individual State Designation Fees), in particular paragraphs (a)(ii), (c) and (d) of that Rule; Rule 9.2 (Standard State Designation Fees); Rule 13.1 (. . . Individual State Later Designation Fees), in particular paragraphs (a)(ii) and (c) of that Rule; Rule 13.2 (Standard State Later Designation Fees); and, in connection with the standard fees, also the Table of Fees.

In connection with each renewal concerning it, each State is entitled to either an individual State renewal fee or to a standard State renewal fee. See Rule 23.3 (. . . Individual State Renewal Fees), in particular paragraphs (a)(ii)(c) and (d) of that Rule; Rule 23.4 (Standard State Renewal Fees); and, as to the latter, also the Table of Fees.

Each Contracting State may choose to benefit from the standard fees instead of the individual fees. The main difference between the two kinds of State fees is that whereas the amount of the individual State fees is governed by the amount of the national fees—decided by each State for itself—the amount of the standard fees is fixed by the States members of the Assembly which apply the standard fee system (see Article 33(2)(c), second sentence). The individual State designation fee due to any State cannot exceed 75% of the national fee of the same State: the difference being considered a rough equivalent of the savings each national Office makes in view of the fact that the international registration reaching it has already undergone some checking that would have to be done, in the case of national applications, by that Office itself, and in view of the fact that the collection of the fees is much simpler—and, consequently, its administration more economical—than in the case of national fees. The individual State renewal fee due to any State cannot exceed the national renewal fee. No reduction is proposed in this case since the amount of renewal fees is generally not fixed in such a way as to compensate the national Office for the work it performs but rather on the basis, or also on the basis, of the consideration that the fees should deter renewals of marks not really needed by the owner.

The choice that each Contracting State will make between the two fee systems may partly depend on the question which of the two will provide the higher fees: States having relatively high national fees will usually earn more under the individual fee system, whereas States having relatively low national fees will usually earn more under the standard fee system, particularly if they carry out examination on the national level to any extent. Another consideration that may play a part in the Contracting State's choice is the fact that under the individual fee system the amount depends entirely on the wish of the interested State, whereas under the standard fee system the amounts are fixed by a vote, possibly not entirely to the liking of States that have not voted for it.

Paragraph (3): See Rules 28 (Payment of Fees), 30 (Fees Belonging to the Designated Offices), 31 (Choice of the Standard State Fee System), 32 (Absence of State Fees), 33 (Fees

Belonging to the International Bureau), and 37 (Fees in the Case of Regional Marks).

The *amounts* of all major fees are shown in the Table of Fees annexed to the Regulations; the amounts of minor fees will be given in the Administrative Instructions; the amounts of the individual State fees will be published once a year in the Gazette.

Partial reimbursement is provided for in Rules 14.3 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)), 15.1 (Application of Rule 14), and 23.8 (Reimbursement of Certain Fees): where the International Bureau declines the international application or the request for recording of a later designation, or the demand for renewal, the fees belonging to the designated States would be reimbursed since, because of the fact that the international application, the request or the demand has been declined, they would *not* be designated States. The fees belonging to the International Bureau would not be reimbursed since that Bureau would have performed the task of checking and conducting correspondence with the applicant or owner, a task that is frequently more costly than in a routine case because the cases involved would be those where the application, request or demand had defects.

ARTICLE 18

Certain National Requirements

(1) [*Fees*] No national Office of any designated State shall, unless acting as an independent review authority, require the payment of any fee in connection with the obtaining or renewing of international registrations and recordings in the said State.

(2) [*Number of Classes and of Goods and/or Services*] No designated State may refuse or cancel the effects provided for in Article 11 merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [*Actual Use*] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of three years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [*Actual Use: Continued*] Where, at the expiration of the three-year time limit referred to in subparagraph (a), the final decision referred to in Article 11(2)(ii) has not been made, the said time limit shall be extended until the expiration of one year counted from the date on which the effect provided for in Article 11(2) does, in fact, come into existence, provided that in no case shall any Contracting State be required to extend the said three-year time limit by more than two years.

(c) [*Actual Use: Continued*] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered, in the name of the person who is the owner of the international registration, in the national register of marks of any designated State, or has been the subject on the part of the said person of an application for registration in that register, the proviso of subparagraph (a) and subparagraph (b) shall not apply to the extent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than three years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the third year counted from the date on which the said application was filed. Where the three-year time limit is extended under subparagraph (b), the preceding sentence shall be applied accordingly. The present subparagraph shall also apply where the earlier registration is one effected in the international register under the Madrid Agreement or the present Treaty.

(d) [*Declaration of Actual Use*] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ("routine declaration"), such declaration may, in the form prescribed by the national law of that State or in the form prescribed in the Regulations, be filed with the International Bureau and shall have the same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to adduce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ["ad hoc requirement"].

(e) [*Declaration of Actual Use: Continued*] No requirement referred to in subparagraph (d) shall be applicable prior to the expiration of the time limit under the proviso of subparagraph (a), subject, where applicable, to subparagraph (b), or subparagraph (c).

(4) [*Intent To Use*] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark, provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [*Provisions Common to Paragraphs (3) and (4)*] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

** [(6) [*Certification and Collective Marks*] Any Contracting State may apply its national law requiring that where the mark is a certification mark or a collective mark the owner thereof must adduce before its national Office certain supporting documents and other evidence, including in particular the bylaws of the association or other entity owning such mark and the rules concerning the control exercised over the use of such mark.]

(7) [*Representation*] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purposes of serving notices on such applicant or owner, an address in that State be indicated, except where, in respect of the mark which is the subject of the international application or the international registration, the applicant or owner is involved in a proceeding before the national authorities of the said State and, where applicable, after the refusal or notice of possible refusal has been notified by the designated Office to the International Bureau as provided in Article 12(2)(i).

(8) [*Service of Certain Notifications*] (a) The national law of any Contracting State may provide that proceedings before a national authority, including a court, in that State may, in respect of any international registration for which the said State is designated, validly be commenced against the owner of the international registration, by means of the service of a notification addressed to him at the International Bureau.

(b) The International Bureau shall promptly forward the notification to the owner of the international registration by registered airmail accompanied by a postal receipt form (*avis de réception, Rückschein*). If the said receipt form showing receipt by the said owner is not received by the International Bureau within one month from the date of its having mailed the notification, the International Bureau shall promptly publish the notification.

(c) Any national law referred to in subparagraph (a) shall provide for a reasonable time limit for the owner of the international registration to respond to the notification and defend his rights in the proceedings.

(d) Subparagraphs (a) to (c) shall not apply to notifications referred to in Article 12(2)(i).

COMMENTS ON ARTICLE 18

Paragraph (1): International registration and renewal being *in lieu of* national registration and renewal, the fees paid under the Treaty and belonging to the designated Offices should compensate them for not collecting national fees.

The fees paid under the Treaty exempt the applicant or owner of the international registration from paying any national fee which otherwise would be due to any national Office for "the obtaining or renewing . . . the effects of such [international] registrations and recordings [under the Treaty] in the said [i.e., the designated] State." The reference to "obtaining" is intended to cover *all* fees leading to registration, that is—depending on the national laws—filing fees, search and examination fees, registration fees, grant fees, publication fees, class fees, fees payable in an opposition proceeding by the applicant, and any other fees, but, of course, *not* fees payable by the opposer in any opposition proceeding and *not* fees payable by the petitioner in any cancellation proceeding (since these are not fees payable by the owner of the international registration). The reference to "renewing" is intended to cover *all* fees connected with the prolongation of the registration, that is—depending on the national laws—renewal fees, recording fees, publication fees, and any other fees. In both cases, only fees concerning national Offices are meant, and *not* fees payable by any party in any proceeding before a court or other independent review authority. An appeals board may be considered an "independent review authority" as long as its decisions are not subject to any instruction.

Paragraph (2): Some national laws provide that for each different class a separate registration is required, or that each registration may relate to only a given number of goods and/or services (for example, ten). Such provisions could not be held against an international registration. Since the amount of the fees payable under the Treaty may depend, among other things, on the number of classes to which the goods and/or services belong, the fee aspects of the said national laws could be taken care of partly if not always wholly.

Paragraph (3)(a): The national laws of some States provide that a mark must be used before an application concerning it may be filed, or before the registration concerning it may be granted. Some national laws provide that the registration must be cancelled if the mark is not used within a specified period of time. Some national laws provide for the cancellation of marks which have been abandoned and establish a presumption of abandonment when the mark is not used for a specified period and its non-use is not excusable.

Under the Treaty these provisions would also apply to marks which are the subject of international registration to the same extent as they are applicable to the marks registered nationally in that State, but with an important qualification: *non-use* at any time prior to the expiration of *three years* could not be a ground for refusing the effects, for cancelling them or for otherwise impairing them. An example of the last-mentioned effect is that an international registration which, in a designated State, has the effect provided for in Article 11(2) may be relied upon even if the mark is not used during the said three-year period in order to prevent and/or to cancel, as the case may be, the registration of another mark which was filed later with the national Office of that State. Another example of the said effect is that an international registration which, in a designated State, has the effect provided for in Article 11(1)—but not yet the effect provided for in Article 11(2)—may be relied upon, even if the mark is not used during the said three-year period, at least in order to delay, until the expiration of that period, any decision on the registration of another mark which was filed later with the national Office of that State. The three-year period would count from the international registration date or the recording date of the later designation, as the case may be, that is, from the date which, for the purposes of the interested State, is the "filing date." In certain circumstances—as described in subparagraph (b)—the period may have to be extended but never beyond five years from the said date (see paragraph (3)(b)).

As stated in the second sentence of subparagraph (a), even though the effects provided for in Article 11 existing in a State cannot be refused, cancelled or otherwise impaired on the ground of non-use during the three-year period, the national law of any Contracting State could provide that any action for infringement may not be started until the owner has commenced use of the mark in that State and any remedy resulting from such action could relate only to the period after the said owner has started use. For example: the owner starts to use the mark as from the second year after the international registration; during the third year after such event, he sues for damages a person who has started to use a similar mark just after the international registration date of his mark and is still using it; the national law may provide that the plaintiff will recover damages only as from the second year.

It goes without saying that provisions of any national law excusing non-use even beyond the three-year period—for example, because the owner of the mark for a pharmaceutical product cannot use it before the authorization of the health authorities is granted—would remain applicable by virtue of the national treatment provisions of the Paris Convention. Such justified non-use, where it is of relevance, would have to be proved according to the national law of each designated State direct before the competent national authorities of such State, without the intermediary of the International Bureau.

Of course, nothing in the Treaty could prevent the national law of any Contracting State from requiring at any time, from the owner of an international registration, evidence of use in any proceeding where such evidence is relevant or necessary under such national law to overcome a ground *other than non-use* for refusing under Article 12, or cancelling under Article 13, the effects of the international registration as defined in Article 11. For example, if registration is refused or cancelled on the ground that the mark is descriptive (or, in the British law, not distinctive) and that ground, in the given case, can be overcome only where the applicant or owner shows that the mark has acquired a secondary meaning (or, as in the British law, that it has been adapted to distinguish or is capable of distinguishing) by reason of use of the mark, evidence of use could be required, but only to overcome the said ground, which is a ground other than non-use.

Paragraph (3)(b): The effect provided for in Article 11(2) is the national registration effect.

The question arises whether this provision should not be completed so that it start with the following words: "Where, one year before the expiration . . ." Such addition would provide the one-year extension even where the final decision is made during the last year of the three-year period.

Paragraph (3)(c): This provision relates to the situation where a mark has been the subject of a national application or registration and is later the subject of an international registration-*cum*-designation. The three-year moratorium would apply only if the national registration took place within the three years preceding the international registration or later designation and only for the period between such registration or designation and the end of a three-year period counted from the national filing date. The maximum required extension of the three-year period is two years.

Paragraph (3)(d): Some national laws require not only that a mark be used but also that the owner of the mark file with the national Office at a certain point in time or from time to time (as fixed in that law) a declaration ("routine declaration") that the mark is (still) used. The Treaty leaves any such requirement intact, subject to two exceptions. One is that such a requirement cannot, obviously, be applied during the three-year moratorium provided for in paragraph (a) (see subparagraph (d)). The other is that any routine declaration could be filed with the International Bureau rather than the national Office (see the subparagraph under consideration). The question when such routine declarations are due will depend on the national law but the national Office will provide and the International Bureau will publish the necessary information (see Rule 24.1: Information or Requirements Concerning Routine Declarations of Actual Use). As to the form of the declaration, the applicant or owner may choose between two. One is the form prescribed by the national law of the State which the declaration concerns ("national forms"). The other is an "international form" in the language of the international application. (See Rules 24.2: National Forms, and 24.3: International Form.) Both kinds of forms would be put at the disposal of the owner of the international registration, free of charge. In any case, the declaration would be transmitted by the International Bureau to the designated Office. A further advantage provided for is that, where evidence is required and does not accompany the declaration (it may accompany it but does not have to do so) or is insufficient, the national Office will give three months for filing or completing such evidence.

It is to be noted that the said facilities apply only to "routine declarations" and not to any declaration which is needed on an ad hoc basis. For example, when non-use is alleged in a cancellation proceeding dealing with a specific mark, in order to overcome such allegation it may well be necessary to make a statement of use. Another example is the declaration of use provided for in the US law as one of the conditions for obtaining incontestability of the owner's right to use the mark: no owner is required to seek such incontestability but, if he wishes to do so, he will, among other things, have to file a declaration alleging continued use for a period of five years subsequent to registration.

Paragraph (3)(e): This provision means that neither routine nor ad hoc declarations could be required during the three-year (or, in some cases, less than three-year or up to five-year) moratorium.

Paragraph (4)(a): Some national laws provide that at the time a person files an application for the registration of a mark he must have a *bona fide* intent to use the mark in the country and that a declaration to that effect must be filed with the national Office. The requirement for a declaration to be filed with the national Office would be inapplicable or, rather, it would be replaced by a declaration to the same effect filed with the International Bureau. Rules 6.3 (Declaration of Intent To Use the Mark) and 11.2 (Declaration of Intent To Use the Mark) provide for the details where the declaration is made in connection with the international application or a later designation, as the case may be, and contain a suggested wording for the declaration which would be recognized by all Contracting States. The wording does not include the expression *"bona fide"* since, at least in civil law countries, it goes without saying that a solemn declaration producing legal effects is not a declaration if it is not made in good faith. The substantive requirement of the national law that the intent to use must exist would be left unaffected by the Treaty. Consequently, where the applicant or owner does not, *in fact*, intend to use the mark, the registration effect may be taken away by any designated State requiring intent to use. It may be taken away notwithstanding the existence of the—false—declaration, and may be taken away at any time, even before the three-year period referred to in paragraph (3)(a) expires.

Paragraph (4)(b): See item (iii) of Rule 18.1 (Form of Notifications).

Paragraph (5): This provision means that, in any routine declaration of actual use (paragraph (3)(c)) and in any declaration of intent to use (paragraph (4)(a)), the alleged use may be either direct (that is, by the owner of the international registration or by the applicant, respectively) or indirect (that is, by a person whose use inures to the benefit of such owner or applicant).

Paragraph (6): See the comments on the bracketed words of Article 2(v).

Paragraph (7): Since the international application is filed with the International Bureau (see Article 5(2)) and since any notice of possible refusal or refusal under Article 12 is notified to the International Bureau (see Article 12(2)(a)(i)), there is no need for direct contact between the applicant or owner of the international registration and the designated Office. However, once the notice of possible refusal or the refusal has been notified to the said owner and the latter contests it, any further contact between the owner and the national authorities (administrative or judicial) will be direct—since the Treaty does not provide for such contacts through the International Bureau—and for such direct contact the designated Office may wish to require that the owner be represented by a local agent or have an address for service in the State concerned.

Paragraph (8)(a): This provision will allow any Contracting State to provide for a special procedure for serving notifications concerning certain proceedings on the owner of the international registration. The proceeding must be one which is before a national authority and the notification must be one which commences the proceeding. The authority may be a court or any other authority. The notification may not be one referred to in Article 12(2)(a)(i) (see subparagraph (d)) since a special procedure is already provided in Article 12 for that notification. Naturally, if the owner has an address for service or a representative in the State, it would make little sense to use the special procedure authorized by this provision. It is to be noted that no Contracting State is obliged to provide for the said special procedure in its national law; Contracting States which consider that their general rules for serving notifications abroad are sufficient will probably make no use of this provision. Finally, it should be noted that the provision relates only to notifications which commence a proceeding because, once the owner is involved in the proceeding, he may, under paragraph (7), be required to have an address for service or a representative in the State in question.

Paragraph (8)(b): Publication will be in the Gazette (see Article 2(ix)).

Paragraph (8)(c): This provision is intended to give an opportunity to the diligent owner to defend his rights.

Paragraph (8)(d): See the comments on subparagraph (a), above.

ARTICLE 19

Recordings Effected by National Offices

(1) The national Office of any Contracting State which effects any recording in its own register of marks or in any other related register in respect of matters that may be recorded in the International Register of Marks with regard to any mark which is registered in the International Register of Marks and for which that State is a designated State shall, at the time of effecting such recording and as provided in the Regulations, notify the International Bureau of the said recording unless the recording has been effected pursuant to a notification by the International Bureau to that national Office.

(2) The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

(3) Until the said annotation and publication are effected, any recording referred to in paragraph (1) shall

not be effective in respect of any third party unless such third party was actually aware of the subject matter of the said recording.

COMMENTS ON ARTICLE 19

Paragraph (1): The Treaty does not require any Contracting State to enter in its own (national) register of marks (or any other related register) marks which, by virtue of the Treaty, have a national registration effect in that State. (Such effect exists by virtue of the Treaty, in particular, under Article 11(2), whether such marks are entered in the national register or not.) But the Treaty does not prohibit the entering of such marks in the national register. If any country chooses to make such entries, that is, to "repeat" the international registration in its national register, it may be that certain changes affecting the mark only in that State will be entered in the national register without the owner's asking for their recording by the International Bureau. For example, ownership of the mark or the list of goods and/or services may change in that State. If such changes are entered in the national register without the owner's asking for them to be recorded in the International Register of Marks, the latter would not reflect them. Such a situation is undesirable since the International Register of Marks would then become incomplete and third parties could not entirely rely on it. It is to avoid this situation that the provision is proposed: any change "directly" entered in the national register would have to be immediately communicated to the International Bureau by the national Office, provided such change concerns matters which may be recorded in the International Bureau. These matters are: change of ownership, change in address, change of representative, change in the list of goods and/or services. Any change in the mark itself is, of course, unrecordable. Any entry in the national register concerning a matter—for example, a license—which may not be recorded in the International Register of Marks would not only not have to be communicated to the International Bureau but, if communicated, would not be the subject of any annotation in the International Register of Marks.

See Rule 34.1 (Notification of Certain Recordings Effected by National Offices).

Paragraph (2): See Rule 34.2 (Annotation and Publication).

In certain cases, the change could only with great difficulty be recorded in all its details in the International Bureau, primarily because of language problems (for example, where the change is in the list of goods and/or services). In such cases, probably only the fact that a change has been entered in the national register and an indication of the nature of the change will be all that is practicable for the purposes of international annotation and publication.

Paragraph (3): Should the national Office fail to proceed as it should under paragraph (1), it can be assumed that any party that may suffer prejudice because of the consequences provided for in paragraph (3) will remind the national Office of its obligation.

A typical case of actual awareness on the part of a third party is the case where such party has had correspondence about the subject matter recorded only in the national register of marks.

ARTICLE 20

Preservation of Rights Acquired Through National Registration

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include all rights, particularly any priority right, existing under the national registration, and, subject to paragraph (4), shall be deemed to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are the same as the goods and/or services referred to in the said national registration.

(2) The applicant or the owner of the international registration of a mark may, as provided in the Regulations, make a declaration alleging that he owns national registrations of the same mark in certain designated States and identifying such registrations. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. It shall, as provided in the Regulations, be accompanied by a certified copy of each national registration referred to in the declaration. The International Bureau shall record and publish the declaration and shall notify the interested designated Offices accordingly, as provided in the Regulations. Those Offices shall refer to the declaration in their respective national registers of marks in connection with the said national registrations.

(3)(a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks and the national registration referred to in paragraph (1) exists in a national register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register.

(4) Where the national registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the said national registration only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said national registration.

COMMENTS ON ARTICLE 20

Paragraph (1): This paragraph deals mainly with the situation in which the owner of a mark switches over from protection by virtue of national registration to protection by virtue of international registration-*cum*-designation under the Treaty. It is essential that he suffer no prejudice because of such switchover, and that is what this provision and paragraph (3) accomplish. The reason for which the owner of a mark may desire such a switchover is that under the Treaty the surveillance of his mark becomes much simpler, and generally also much cheaper, if for no other reason than that renewals valid in a number of States can be made at regular (ten-year) intervals, in one place (the International Bureau), according to a centrally (in the Gazette) publicized fee schedule, by payment in one currency (Swiss) by a single transfer, subject to the simplest single formality (filling in one form), and without the need of any intermediary.

The paragraph provides that the effect of the switchover is that the rights under the national registration are deemed to be included and continue to be deemed to be included in the international registration. The continued inclusion of the rights under the national registration is unconditional as long as that registration exists, and for a further year after it has ceased to exist. Thereafter, it is conditional, the condition being that the declaration referred to in paragraph (2) has been filed (see paragraph (4)). This declaration is necessary because, without it, persons consulting the International Register of Marks would not be informed about the continued inclusion of rights acquired under the national registration and those consulting the national register could assume that, since the national registration had expired, all the rights which had been acquired under it would also have expired.

Paragraph (2): As to the declaration, see Rule 6.4 (Declarations Under Articles 20(2) and 21(2)), dealing with declarations included in international registration, and Rule 11.3 (Declarations Under Articles 20(2) and 21(2)), dealing with declarations included in requests for the recording of later designations. See also Rule 25 (Declarations Concerning Earlier National and Madrid Registrations).

As to recording the declaration, see Rule 3.1 (Keeping of the Register).

As to publishing the declaration, see paragraph (a)(ix) of Rule 17.1 (Contents of Publication of International Registrations) and paragraph (a)(vii) of Rule 17.2 (Contents of Publication of Recordings of Later Designations), as well as Rule 25.4 (Publication; Notification [of Declarations]).

As to notifying the declaration, see Rule 18.1 (Form of Notifications [of International Registrations and Recordings of Later Designations]), by virtue of which everything that is published is also separately notified to each interested designated State. See also Rule 25.4 (Publication; Notification [of Declarations]).

The last sentence of this paragraph provides that the declaration will be referred to in the *national* register in connection with the national mark on the basis of which the switchover took place. This is important because it means that anybody consulting the national register will be alerted to the fact that mere failure to renew the national registration does not necessarily mean that the protection has ceased.

Paragraph (3)(a): The words "to the extent that they [the conditions referred to in paragraph (1)] are complied with" are intended to emphasize that the provision applies only to the extent to which the goods and/or services listed in the national registration are the same as those which are listed in the international registration. See also the comments on Article 12(1).

Paragraph (3)(b): This subparagraph deals with the situation contemplated in Article 11(3) (see the comments thereon) and means that, for example, if a person owns a mark registered in the Supplemental Register of the U.S. Patent Office and later switches over to an international registration-*cum*-designation of the United States of America, such designation will not be subject to the possibility of refusal only if it is connected with the indication of the Supplemental Register (see Rule 6.5: Option Under Article 11(3)).

Paragraph (4): The declaration must be accompanied by a certified copy of the national registration (paragraph (2), third sentence) in order to allow easy verification of the identity of the mark, and of the goods and/or services, covered by that registration and the international registration. See also the comments on paragraph (1).

ARTICLE 21

Preservation of Rights Acquired Through International Registration Under the Madrid Agreement

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration of the same mark effected under the Madrid Agreement ("Madrid registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under that Madrid registration and, subject to paragraph (4), shall be deemed to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are the same as the goods and/or services referred to in respect of the said State in the Madrid registration.

(2) The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, make a declaration alleging that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. The International Bureau shall record and publish the declaration and shall refer to it in the corresponding Madrid registration, as provided in the Regulations.

(3) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

(4) Where the Madrid registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the Madrid Agreement only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said Madrid registration.

COMMENTS ON ARTICLE 21

Paragraphs (1) to (4): This Article has virtually the same content as Article 20, except that it deals with the preservation of rights acquired not through national registration but through international registration under the Madrid Agreement.

Consequently, the comments made in connection with Article 20 apply also to this Article, *mutatis mutandis*.

The switchover is facilitated in certain circumstances through exemption from certain fees (see Rule 9.4: Exemption from Certain Fees).

ARTICLE 22

Preservation of the Right To Use the Madrid Agreement

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

COMMENTS ON ARTICLE 22

Sole paragraph: The proposed Treaty will not replace the Madrid Agreement, not even among States which will be party to both instruments. Where any applicant or owner of a mark is a national or a resident of a State party to both instruments, he will have the freedom to choose and may use, for the purposes of protection in other States that are also party to both instruments, either of the two instruments. The freedom to choose the Madrid Agreement is spelled out in this Article. The freedom to choose the present Treaty—which will be the more recent one—goes without saying.

ARTICLE 23

National Registrations Based on International Registrations

(1) The owner of the international registration of a mark having the effect provided for in Article 11(2) in any Contracting State may, at any time and with reference to such international registration, apply for the registration of the same mark in the national register of marks of that State, and such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing under the said international registration in the said State, even where the international registration subsequently expires in respect of that State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are the same as the goods and/or services referred to in the said international registration in respect of the said State.

(2) Until the expiration of the effect referred to in paragraph (1), the provisions of Article 19(1) and (2) shall apply also in connection with any national registration effected under that paragraph.

COMMENTS ON ARTICLE 23

Paragraph (1): This provision permits the owner of the international registration to switch over from protection by

virtue of the Treaty to protection by virtue of national registration in any designated State and guarantees that such switchover will be without any diminishing of the rights which the owner had in respect of that State under the international registration.

Paragraph (2): Article 19(1) and (2) provide, in essence, that, where the mark is registered in both registers, recordings in the national register of marks must be indicated in the International Register of Marks. As to the reasons for this requirement, see the comments on Article 19.

ARTICLE 24

Regional Marks

Where any resident or national of a Contracting State is entitled, under a regional treaty, to file applications for the registration of regional marks and to own registrations thereof, the national law of any Contracting State party also to that regional treaty may provide that its designation under this Treaty shall have the same effect as if that designation included an indication of the wish to obtain the same effects as if the mark had been applied for and registered as a regional mark.

COMMENTS ON ARTICLE 24

Sole paragraph: There are no States at the present time in which the owner of the mark would be able to choose between protection by virtue of a registration in a national register or by virtue of a registration in a regional register. However, it is quite possible that, in the future, such States will exist. The Article in question contemplates the existence of those States and allows them, subject to one condition, to "close" the effect of national registration to marks for which the TRT is used. Such a State must, however, "open" the regional registration effect to such marks. The condition is that the regional treaty providing for regional registration must be a treaty which allows the use of that treaty by any owner of a mark who is entitled to use the TRT.

In connection with regional marks, the question should be examined whether it is necessary that the Treaty contain a provision to the effect that, "where a treaty concerning a regional mark provides that any applicant for such mark cannot limit his application to certain of the States party to that regional treaty and where the applicant or owner of an international registration designates one or more Contracting States party also to the said regional treaty, indicating at the same time the wish to obtain a regional mark, but does not designate all the States party to the said regional treaty, such designation shall be treated as designation of all the States party to that regional treaty," or whether such effect follows automatically from the provisions of the regional treaty and the organization of its register and the TRT permits of such automatic effect.

Furthermore, the question should be studied whether certain provisions concerning fees should not expressly differentiate between regional and national fees.

ARTICLE 25

Representation Before the International Bureau

(1) Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) Any invitation, notification or other communication addressed by the International Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the International Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3)(a) Where there are several applicants and they have not appointed a common representative as provided in the Regulations, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several owners of an international registration and they have not appointed a common representative as provided in the Regulations, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the owners of the international registration.

COMMENTS ON ARTICLE 25

Paragraph (1): See Rules 2.1 (Number of Duly Appointed Representatives), 2.2 (Form of Appointment), 2.3 (Revocation, Lapse, or Renunciation of Appointment).

This provision means that any person may represent an applicant or owner of an international registration before the International Bureau. The representative may be not only a trademark agent or attorney but also one of the employees of the applicant or owner, or any other person, including a legal entity, and no requirements as to professional qualifications may be prescribed. Of course, if and when any act has to be accomplished before a national Office or other national authority, the national law applicable to that Office will govern and, consequently, in proceedings before national authorities it will frequently be necessary that the representative be a qualified trademark attorney or agent residing in the country in which that national Office or other authority is located.

Paragraph (2): According to the first sentence, where, for example, the Treaty provides that the International Bureau has to (i) invite the applicant to correct certain defects (including the payment of missing fees) (Article 7(2) and (3)), (ii) notify the applicant if it declines the international application (Rule 14.3) or if it receives from a designated State a notice of refusal or possible refusal (Article 12(3)(a)), or (iii) notify the owner of the international registration if it declines a request for changing the list of goods and/or services (Article 15(3)), the said Bureau will send the invitation or notification to the duly appointed representative (rather than the applicant or the owner of the international registration) and thus will have complied with the requirements of the Treaty.

According to the second sentence, the duly appointed representative, instead of the applicant or the owner of the international registration, may, for example, sign the international application, any request for recording later designations or a change in ownership or a change in the list of goods and/or services, any demand for renewal, any declaration of intent to use, or any declaration of actual use, and any communication of withdrawal or renunciation referred to in Rule 29.

Paragraph (3)(a): See Rule 2.1(a), which provides that, if there are several applicants or owners of the international registration, they may appoint only one representative.

Paragraph (3)(b): See the comments on paragraph (3)(a).

ARTICLE 26

Effect of Priority Claim Contained in the International Application or in the Request for the Recording of Later Designations

The conditions for and the effect of any priority claimed in the international application or in the request for the recording of later designations shall be as provided for in respect of marks in Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property.

COMMENTS ON ARTICLE 26

Sole Paragraph: The international application or any request for later designation may contain a declaration claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention (see Articles

5(1)(b) and 6(2)(b)). Rule 6.2 (Claiming of Priority) regulates the details for making the declaration of priority effective in respect of all of the States designated in the international application. Rule 11.1 (Claiming of Priority) provides for the same in respect of any later designated State.

ARTICLE 27

International Application as Possible Basis of Priority Claim

(1) Any international application which is regular shall be equivalent to a regular national filing within the meaning of Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and shall be recognized as the basis of a priority claim as provided for in that Act.

(2) For the purposes of paragraph (1), an international application shall be regarded as regular if it is adequate to establish the date on which it was filed with the International Bureau *[or, where it was filed through the intermediary of a national Office, with that Office].

COMMENTS ON ARTICLE 27

Paragraph (1): This Article makes the international application the possible basis of a priority claim. Since, under the Treaty, international applications may be filed without or before the existence of any national filing (except in the case contemplated in Article 4(6)), international applications will frequently be "first" applications, and it will be useful to invoke their priority in States which cannot be designated (because they are not party to the Treaty) or which, for one reason or another, are not designated although they could be designated.

The Stockholm Act of the Paris Convention provides that "any filing that is equivalent to a regular national filing . . . under . . . multilateral treaties concluded between countries of the Union shall be recognized as giving rise to the right of priority" (Article 4A(2)).

The paragraph under consideration provides that a regular international filing comes within the scope of the quoted provision of the Paris Convention.

Paragraph (2): This paragraph specifies the conditions which an international application must satisfy to constitute a "regular" filing and defines the date of filing.

ARTICLE 28

Delay in Meeting Time Limits

(1) Subject to paragraph (3), any Contracting State shall, as far as that State is concerned, excuse, for reasons admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) Subject to paragraph (3), any Contracting State may, as far as that State in concerned, excuse, for reasons other than those admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(3) Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in *[Article 7(1), Article 8(1) and] Article 12(2)(a)(i).

(4) The International Bureau shall not excuse delays by applicants, owners of international registrations or national Offices in meeting any time limit fixed in this Treaty and the Regulations.

COMMENTS ON ARTICLE 28

Paragraph (1): A typical reason for which national laws excuse delays in meeting time limits is *force majeure*. Thus, for example, if, according to the national law of a Contracting State, a postal strike is considered *force majeure* and, because of that strike, the missing signature on a request for the recording of the later designation of that State is furnished after the expiration of the time limit applicable under Article 8(2), the national Office of that State will, on the request of the owner of the international registration, have to request the International Bureau to proceed with the recording of the designation (see Article 9(1)(i) and (2)(i)).

Paragraph (2): If, for example, the delay is not due to *force majeure* but—to modify the example given above—is caused by the late arrival in the mail of the signature, for no apparent reason, the designated State may, if it so wishes, proceed as outlined in the above example.

Paragraph (3): The time limit provided for in Article 12(2)(a)(i) is the fifteen-month time limit for notifying refusals or notices of possible refusals to the International Bureau. Excusing delays in meeting that time limit would mean that the Contracting State would be excusing its own delay. This would seem to be going too far, particularly since it would create uncertainty both for the owner of the mark and for third parties over an indefinite period of time.

Paragraph (4): This provision is needed even for cases where the delay is caused by *force majeure* since the International Bureau has no rules for defining the concept of *force majeure* and has no machinery for taking evidence and passing judgment on the question whether a given circumstance amounts to *force majeure*.

ARTICLE 29

Correction of Errors of the International Bureau

(1) Subject to the provisions of Article 9, where, in the opinion of the applicant or owner of the international registration, the International Bureau has, in applying the provisions of this Treaty and the Regulations, made an error which may affect the interests of such applicant or owner in respect of any designated State, the said applicant or owner may, within the time limit fixed in the Regulations, file with the national Office of such State a petition for the purpose of requesting the International Bureau to correct the error in respect of the said State.

(2) If the national Office or any other competent authority of the said State finds that the International Bureau has in fact made the error which is the subject of the petition, the said national Office shall request the International Bureau to correct that error in respect of that State, and the International Bureau shall proceed as requested.

(3) The applicant or the owner of the international registration who files a petition under paragraph (1) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

(4) Where the correction requires a corresponding modification of the International Register of Marks, the International Bureau shall modify that Register accordingly. Furthermore, where the correction affects any information which has been the subject of a publication by the International Bureau, that Bureau shall publish the correction.

COMMENTS ON ARTICLE 29

Paragraph (1): Whereas Article 9 provides for measures enabling the effects to be avoided of any error by the International Bureau which resulted in the declining of the international application or the request for the recording of later designations, this Article provides for measures enabling the effects to be avoided of any error by the International Bureau which does not result in the said declining but which otherwise may adversely affect the interests of the applicant or the owner of the international registration. Such error may be, for example, the refusal by the International Bureau to record the renewal, or the change in ownership, or the limitation of the list of goods and/or services, because it has—erroneously—found that the fees paid were insufficient.

It goes without saying that, as in the case of erroneous declining (see the third paragraph of the comments on Article 7, "Generally"), so also in the case of any other error, the applicant or the owner of the international registration may call the attention of the International Bureau to the fact that, in his opinion, it is about to make an error or has made an

error, and the International Bureau may decide not to make the decision or come back on it. The question should be studied whether any error reflected in a publication should be so correctable only within a certain time limit, for example 6 months, from the date of publication.

As to the time limit for filing the petition, see Rule 38.1 (Time Limit Under Article 29). See also Rule 38.3. (Information Available to National Offices) and Rule 38.4 (Information Furnished by the National Office).

Paragraph (2): This provision means that all consequences of the error will be eliminated as far as the designated State in question is concerned.

Paragraph (3): See Rule 38.2 (Recording and Publication Under Article 29(3)).

Paragraph (4): If the correction does not relate to any matter which has been the subject of publication, the error and its correction will be shown only by the file of the international registration.

CHAPTER II: ADMINISTRATIVE PROVISIONS

ARTICLE 30

Assembly

(1) (a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2) (a) The Assembly shall:

(i) deal with all matters concerning the maintentance and development of the Union and the implementation of this Treaty;

(ii) exercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;

(iii) give directions to the Director General concerning the preparation for revision conferences;

(iv) review and approve the reports and activities of the Director General concerning the Union, and give him all necessary instructions concerning matters within the competence of the Union;

(v) determine the program and adopt the budget of the Union, and approve its final accounts;

(vi) adopt the financial regulations of the Union;

(vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;

(viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;

(ix) decide upon the establishment of any agency of the International Bureau in any place outside Geneva (Switzerland) for the purposes of receiving documents and payments under this Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva;

(x) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) A delegate may represent, and vote in the name of, one State only.

(4) Each Contracting State shall have one vote.

(5)(a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum, the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6)(a) Subject to the provisions of Article 32(5)(f), Article 33(2)(b) and (c), and Article 36(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7)(a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) The Assembly shall adopt its own rules of procedure.

COMMENTS ON ARTICLE 30

Paragraph (1)(a): "The States party to this Treaty" (Article 1(1)) are the Contracting States. "Assembly" is defined in Article 2(xix).

Paragraph (1)(b): See Rule 39.1 (Expenses Borne by Governments), according to which the expenses of each delegation are borne by the Government which the delegation represents.

Paragraph (2)(a): This paragraph enumerates some of the main tasks of the Assembly. The Assembly is the principal organ of the Union, in which all Contracting States are represented (paragraph (1)(a)) and have equal rights (paragraph (4)). The Draft provides for only one other organ and that is the secretariat, called the "International Bureau," headed by the Director General (see Article 31). The International Bureau is the secretariat of the World Intellectual Property Organization (WIPO), with headquarters in Geneva, Switzerland (see Article 2(xx)). WIPO administers several intellectual property Unions, including the Paris Union, the Madrid Union, and, once it comes into effect, the Union created by the Patent Cooperation Treaty (PCT).

As to the reasons for not proposing the creation of an Executive Committee see the comments on paragraph (7)(a). "Union" is defined in Article 2(xviii).

Paragraph (2)(b): The Coordination Committee of WIPO is composed of the members of the Executive Committee of the Paris Union and the members of the Executive Committee of the International (Berne) Union for the Protection of Literary and Artistic Works. "Organization" is defined in Article 2(xx).

Paragraph (3): In other words, no person can represent two or more member States.

Paragraph (4): This provision ensures equality among the member States.

Paragraph (5)(a): This provision is qualified in subparagraph (b), which provides that decisions can be made also in the absence of a quorum: decisions of a procedural nature nature made in the absence of a quorum are unconditionally valid, whereas all other decisions made in the absence of a quorum and of the required majority obtain effect after what amounts to a continuation—by correspondence— of the voting.

Paragraph (5)(b): See the comments made in connection with the preceding subparagraph. See also Rule 40.1 (Voting by Correspondence).

Paragraph (6)(a): Article 32(5)(f) deals with the majority required for decisions concerning the working capital fund. Article 33(2)(b) and Article 33(2)(c) deal with the majorities required for amending the Regulations, a matter within the power of the Assembly. The majorities are two-thirds for some provisions and three-fourths for others.

Article 36(2)(b) deals with the majorities required for amending certain provisions of the Treaty (all provisions—except one—fixing time limits and some administrative provisions), a matter within the power of the Assembly. The required majority is three-fourths for the said provisions, and unanimity for changing the length of the fifteen-month time limit fixed for notifying refusals and notices of possible refusal, as well as of the one-month time limit within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau.

Paragraph (6)(b): Abstentions, whether explicit or tacit, of delegations represented in the Assembly are, of course, counted in the quorum.

Paragraph (7)(a): Traditionally, the place and the period are Geneva and the end of September/beginning of October.

In some other treaties which are administered by WIPO and which constitute a Union, the Union has not only an Assembly but also an Executive Committee (generally consisting of one quarter of the States members of the Assembly) and that Committee meets once a year and the Assembly once every three years. For the purposes of the present Treaty, the constitution of a body (e.g., an Executive Committee) consisting of some only of the members of the Union is not proposed and it is prposed that the Assembly meet every year. The main reasons for not proposing the establishment of an Executive Committee and for proposing the institution of annual sessions of the Assembly are that the Regulations, including the fees under those Regulations, would probably have to be under constant review, that relatively large sums of money would go to the member States through the Union each year, and that those are all matters of equal interest to all member States.

Paragraph (7)(b): The request will be addressed to the Director General, who must then convene the extraordinary session.

Paragraph (8): There are in existence what are called the General Rules of Procedure of WIPO, which the organs of the various Unions usually take as a basis for their own rules of procedure. The latter may, of course, differ from the former in any and every respect which the Assembly sees fit.

ARTICLE 31

International Bureau

(1) The International Bureau shall:

(i) perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;

(ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) The Director General shall be the chief executive of the Union and shall represent the Union.

(3) The Director General shall convene any committee and working group established by the Assembly and all other meetings dealing with matters of concern to the Union.

(4)(a) The Director General and any staff member designated by him shall participate, without the right to vote, in all meetings of the Assembly, the committees and working groups established by the Assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General, or a staff member designated by him, shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5)(a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General, or a staff member designated by him, shall be ex officio secretary of any revision conference.

(6) The Regulations shall specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

COMMENTS ON ARTICLE 31

Paragraph (1)(i): Among the tasks specially assigned, the most important are the receiving of the international applications, the keeping of the International Register of Marks, the publication of the Gazette, and the notification of national Offices and owners of international registrations.

Paragraph (1)(ii): As to revision conferences, see Article 35.

Paragraph (2): A similar provision is included in the "Charters" of all the Unions administered by WIPO.

Paragraph (3): The rules of procedure will contain provisions as to agendas and the length of the period which must be left between the sending of the preparatory documents and the meeting. In one case (Article 36(1)(b)), this period is fixed by the Treaty itself.

Paragraph (4)(a): "Participate" should be understood as meaning that he has the right to be present and the right to speak.

Paragraph (4)(b): The usual tasks of the Secretary are to assist the Chairman and prepare a draft report on the meeting.

Paragraph (5)(a): As to revision conferences, see Article 35. "Preparations" mainly consist in making proposals, receiving and distributing any proposals made by member States, convening preparatory meetings and preparing proposals for such meetings.

Paragraph (5)(b): This is a customary provision for all Unions administered by WIPO.

Paragraph (5)(c): "Take part" should be understood as meaning that they have the right to be present and the right to speak.

Paragraph (5)(d): See the comments made on paragraph (4)(b).

Paragraph (6): Such sources include, for example, furnishing their statistics. Naturally, the services in question would be of the same kind for each national Office.

ARTICLE 32

Finances

(1)(a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) The budget of the Union shall be financed from the following sources:

(i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
(ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
(iii) gifts, bequests, and subventions;
(iv) rents, interests, and other miscellaneous income.

(4)(a) The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5)(a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the found is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the found may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various countries since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of the provisions of subparagraphs (a), (b), and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(6)(a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provided that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) The auditing of the accounts shall be effected by one or more of the Contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

COMMENTS ON ARTICLE 32

Paragraph (1)(a): This provision and most of the others in this Article are identical or almost identical with the "Finances" provisions in the "Charters" of the other Unions administered by WIPO.

Paragraph (1)(b): The main sources of income will be fees and the sale of publications. The main expenses will be for staff salaries and printing. The "sum made available to the budget of the Conference of the Organization" would mainly serve purposes of technical assistance to member States. Similar provisions exist in the "Charters" of the Paris and Berne Unions. Of course, it is for the Assembly to decide whether to make any contribution for the said purpose and, if so, how much.

Paragraph (1)(c): Typical common expenses are those connected with the buildings used by the International Bureau and the staff salaries of such "common services" as the Director General's Office, External Relations, Finances, and Personnel.

Paragraph (2): Such coordination is mainly necessary in connection with the "common expenses."

Paragraph (3): Fees and receipts from the sale of publications will represent the greatest part of the income.

Paragraph (4)(a): In other words, the Union should be self-supporting. Consequently, there is no provision for any regular contribution by member States. In other words, any State which becomes party to the Treaty assumes no financial obligations, except, perhaps, that of contributing to a working capital fund. The constitution of such a fund may not, in certain circumstances, take place at all (see paragraph (5)(d)), but, if it does, its amount will be decided by the Assembly (see paragraph (5)(c)). Any contribution will be rather in the nature of a loan since it must be reimbursed if no longer needed (see paragraph (5)(a), last sentence).

The existing Madrid Agreement provides for the yearly distribution, among the member States, of any "profit" of the International Bureau, that is, of any difference between income and expenditure when the former is larger than the latter. The main source of income being fees, such profit means that the fees are set at a higher level than is necessary to make the international registration service self-supporting. The intention of this provision, and, more generally, of the proposed system, is not to make a profit but to fix the fees at the lowest possible safe level to make the service self-supporting. Consequently, there should be no or only an insignificant profit. That is why the present Draft does not provide for distribution of profits, but, if there are any, they will be paid into a reserve fund.

Paragraph (4)(b): The financial regulations will be adopted by the Assembly.

Paragraph (5)(a)(b)(c)(d)(e) and (f): See the comments made in connection with paragraph (4)(a).

Paragraph (6): The State in question is Switzerland. The provision is similar to parallel provisions in the "Charters" of the other Unions administered by WIPO. The Swiss Government has not yet been consulted on this draft provision.

Paragraph (7): The financial regulations will be established by the Assembly.

ARTICLE 33

Regulations

(1) The Regulations adopted at the same time as this Treaty are annexed to this Treaty.

(2)(a) The Assembly may amend the Regulations. Amendments may consist also of new provisions added to the Regulations concerning:

(i) matters in respect of which this Treaty expressly refers to the Regulations or expressly provided that they are or shall be prescribed,

(ii) any administrative requirements, matters or procedures,

(iii) any details useful in the implementation of this Treaty.

(b) Subject to subparagraph (c), the amendment of the Regulations shall require two-thirds of the votes cast.

(c) The amendment of any provision of the Regulations affecting the amount of the fees referred to in Article 17(2), as well as the distribution among the national Offices and the transfer to them of such fees, shall require three-fourths of the votes cast. Where the amendment relates to fees referred to in Article 17(2) but those fees are fees to which only some of the Contracting States are entitled, only the Contracting States entitled thereto shall, for the purposes of the quorum, be considered Contracting States, and only they shall have the right to vote.

(3) In the case of conflict between the provisions of this Treaty and those of the Regulations, the former shall prevail.

COMMENTS ON ARTICLE 33

Paragraph (1): This provision means that the Regulations will be adopted in and by the diplomatic conference which will adopt the Treaty and that the text of the Regulations will be part of the document opened for signature at the end of that conference.

Paragraph (2)(a): This is probably the most important right of the Assembly.

Paragraph (2)(b): Amendment of subparagraph (c) requires three-fourths of the votes cast.

Paragraph (2)(c): Article 17(2) deals with the fees to which the Contracting States are entitled. It is the only provision which has an effect on the size of the income that each Contracting State will derive from the Treaty. The fees whose amount is fixed in the Regulations and to which only some of the Contracting States are entitled are the standard State fees (see Rules 9.2, 13.2 and 23.4, as well as the Table of Fees). The provision means, in particular, that, when any proposal to change the amounts of the standard State fees is voted upon, only those Contracting States will have the right to vote which have opted for the standard State fee system, whereas those which apply the individual State fee system will not have the right to vote.

Paragraph (3): The hierarchy of the two instruments (Treaty, Regulations) follows that of the two organs (Diplomatic Conference, Assembly) which adopt them.

ARTICLE 34

Search Service

(1) The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) Searches shall be made on request and shall be subject to the payment of fees fixed under the Regulations. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

COMMENTS ON ARTICLE 34

Paragraph (1): Such a Search Service for marks registered under the Madrid Agreement exists today and has been in existence for decades. "Anticipations" means identical and similar marks. "Other marks" means marks registered under the Madrid Agreement and marks registered in the national register of marks of any given State. Inclusion in the Service of other marks, however, requires a decision by the Assembly.

Paragraph (2): Search reports have, of course, no legal effect whatsoever.

Paragraph (3): The fees must make the Service self-supporting since no sources of revenue other than the fees are provided for.

CHAPTER III: REVISION AND AMENDMENT

ARTICLE 35

Revision of the Treaty

(1) This Treaty may be revised from time to time by a special conference of the Contracting States.

(2) The convocation of any revision conference shall be decided by the Assembly.

(3) The provisions referred to in Article 36(1)(a) may be amended either by a revision conference or according to the provisions of Article 36.

[(4) Any amendment concerning any obligation on the part of the International Bureau which a revision conference has unanimously adopted and which has come into effect shall, if the amendment is in conflict with any earlier provision concerning any obligation on the part of the International Bureau, prevail even where the earlier provision is still in force.]

COMMENTS ON ARTICLE 35

Paragraph (1): "Special conference" means a diplomatic conference, that is, a conference among Governments represented by delegations having full powers to vote and sign.

Paragraph (2): "Revision conference" means the same as "special conference," the term used in paragraph (1).

Paragraph (3): The provisions referred to in Article 36(1)(a) are certain administrative provisions and the length of the time limits fixed in the Treaty.

Paragraph (4): This provision is presented between square brackets because the Committee of Experts of May 1972 took no position on the question whether the provision, suggested by one of the governmental experts, should be included. It is intended to exempt the International Bureau from conflicting obligations. For example, if an amendment to the Treaty were to abolish the obligation of the International Bureau to notify certain matters to the designated States, such obligation would cease even in respect of States which are not bound by the amendment.

ARTICLE 36

Amendment of Certain Provisions of the Treaty

(1)(a) Proposals for the amendment of the length of any time limit fixed in Chapter I of this Treaty, or for any amendment to Articles 30(5) and (7), 31, 32 and 34, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2)(a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in *[Article 7(1), Article 8(1) and] Article 12(2)(a)(i) shall require that no Contracting State vote against the proposed amendment.

(3)(a) Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with the provisions of subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

COMMENTS ON ARTICLE 36

Paragraph (1)(a): The time limits whose length is fixed in Chapter I of the Treaty are:

(i) The time limit (one month) within which certain defects concerning the international application or the request for the recording of later designations may be corrected without "later-dating" (Articles 7(3)(c) and 8(2)(a)),

(ii) the time limit (three months) within which certain defects concerning the international application or the request for the recording of later designations may, subject to "later-dating," be corrected (Article 7(2)(c), (3)(d), and Article 8(2)(a)),

(iii) the time limit (three months within which the list of goods and/or services may, in cases other than those covered by Article 15, be limited (Articles 7(4)(a) and 8(2)(a)),

(iv) the time limit (two months) within which a petition or application for the avoiding of the effects of declining may be filed (Article 9(1)),

(v) the time limit (15 months) within which refusals or notices of possible refusal must be notified by national Offices to the International Bureau (Article 12(2)(a)),

(vi) the time limit referred to in Article 14(3)(d),

(vii) the time limits (six months before and six months after the starting date of the renewal) within which the demand for renewal must be filed (Article 16(3)(a)),

(viii) the time limit (three years and, in certain cases, up to five years or, in other cases, less than three years) of the moratorium for certain purposes on actual use (Article 18(3)(a), (b) and (c)),

(ix) the time limit (three months) for adducing certain evidence of actual use in certain cases (Article 18(3)(d)),

(x) the time limit (one month) for publication of certain notifications presumed not to have been actually received by the owner of the international registration (Article 18(8)(b)),

(xi) the time limit (one year) provided for the filing, in certain cases, of declarations under Articles 20(2) and 21(2) (Articles 20(4) and 21(4)),

(xii) the time limit (one month) within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau (Articles 7(1) and 8(1)).

Article 30(5) and Article 30(7) are the provisions on the quorum in the Assembly and the provisions on the times when ordinary and extraordinary sessions of the Assembly meet. Whereas the Stockholm Acts of the Paris Convention (Article 17) and of the Madrid Agreement (Article 13) provide that a qualified majority of the Assembly may amend any provision of that Convention or that Agreement concerning the Assembly, the PCT (Article 61(1)(a)) allows the same procedure only in the case of those provisions concerning the Assembly which deal with the quorum, voting on matters relating to Chapter II (inapplicable here), and the Executive Committee (inapplicable here). The proposed Draft follows the PCT by allowing the said procedure not in the case of all, but only in the case of some, of the provisions concerning the Assembly, namely, as already stated, in the case of the quorum (as in the PCT) and the frequency of the meetings of the Assembly (a matter not relevant in the PCT, which provides for an Executive Committee). The proposed Draft does not follow the Stockholm Act of the Paris Convention because, there, the role of the Assembly is quite different (it has no regulation-making power); and it does not follow the Stockholm Act of the Madrid Agreement because the expected membership of the proposed Treaty will probably be more like that of the PCT than that of the present Madrid Agreement.

Article 31 deals with the International Bureau. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 32 deals with the finances of the Union. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 34 deals with the Search Service. "Initiated" means "made."

The reason for providing for a procedure easier than revision—that is, the procedure of amendment by an Assembly decision—is that it may well be that changing circumstances or experience will show that some of the time limits are too long or too short or that the said administrative provisions could be usefully improved upon. It should be possible for such amendments—which would be dictated by practical needs and would not affect anything basic—to enter into effect without delay. This, too, is feasible only under the proposed amendment procedure since entry into force of revisions usually requires several years.

Paragraph (1)(b): This provision is intended to give sufficient time for reflection to the Governments of the Contracting States.

Paragraph (2)(a): As to the required majority, see the following subparagraph.

Paragraph (2)(b): Since the time limits fixed in the bracketed parts of Articles 7(1) and 8(1) and in Article 12(2)(a)(i) are time limits which national Offices have to respect, it appears to be wise to place them under a unanimity rule.

Paragraph (3)(a): As to States which become Contracting States later, see subparagraph (c).

Paragraph (3)(b): In other words, no Contracting State will be bound by an amendment increasing its financial obligations unless it agrees to be so bound. The only financial obligation provided in the Draft is the obligation to contribute to a working capital fund (see Article 32(5)).

Paragraph (3)(c): As to becoming a Contracting State, see Article 37.

CHAPTER IV: FINAL PROVISIONS

ARTICLE 37

Becoming Party to the Treaty

(1) Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

(i) signature followed by the deposit of an instrument of ratification, or

(ii) deposit of an instrument of accession.

(2) Instruments of ratification or accession shall be deposited with the Director General.

(3)(a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when another State, or either one of two other States, or both of two other States, specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited

(i) on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession,

(ii) where the instrument of ratification or accession of any specified State itself is accompanied by a declaration concerning other States, on the day on which the instrument of ratification or accession of the said specified State is to be considered to have been deposited.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect to two States, may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification or accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

(4)(a) The provisions of Article 24 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply to this Treaty.

(b) Subparagraph (a) shall in no way be understood as implying the recognition or tacit acceptance by a Contracting State of the factual situation concerning a territory to which this Treaty is made applicable by another Contracting State by virtue of the said subparagraph.

COMMENTS ON ARTICLE 37

Paragraph (1): The legal effect of ratification and accession is the same. The difference is merely a terminological one, "ratification" referring to acceptance by a signatory State, and "accession" referring to acceptance by a State which has not signed the Treaty.

Paragraph (2): Such instruments are usually signed by the Head of State.

Paragraph (3)(a): This provision enables any State to say, in effect, that it will become party only if State X, or State X or State Y, or States X and Y, also become party. The provision is not without precedent. Protocol No. 3 of the Universal Copyright Convention, concluded in 1952, is such a precedent.

Paragraph (3)(b): This provision enables any State having said, in effect, that it will become party only if State X also becomes party to change its mind, which it might well wish to do if, in the meantime, the membership of State X has ceased to be indispensable in the eyes of the State having made the declaration.

Paragraph (4)(a): Article 24 of the Stockholm Act of the Paris Convention is worded as follows:

"(1) Any country may declare in its instrument of ratification or accession, or may inform the Director General by written notification any time thereafter, that this Convention shall be applicable to all or part of those territories, designated in the declaration or notification, for the external relations of which it is responsible.

"(2) Any country which has made such a declaration or given such a notification may, at any time, notify the Director General that this Convention shall cease to be applicable to all or part of such territories.

"(3)(a) Any declaration made under paragraph (1) shall take effect on the same date as the ratification or accession in the instrument of which it was included, and any notification given under such paragraph shall take effect three months after its notification by the Director General.

"(b) Any notification given under paragraph (2) shall take effect twelve months after its receipt by the Director General."

Paragraph (4)(b): This subparagraph is almost identical with Article 62(4) of the Patent Cooperation Treaty, and the preceding subparagraph with Article 62(3).

ARTICLE 38

Entry Into Force of the Treaty

(1) This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accession.

COMMENTS ON ARTICLE 38

Paragraph (1): It has been said in the past that any new Treaty on the international registration of marks should come into effect only if certain States not members of the Madrid Union accept it. It is believed that this desire is largely met by Article 37(3)(a). Declarations under that Article and the naming of the same State or States can hold up the entry into force of the Treaty until the said State or States accept it, even if the number of other States runs to dozens.

In other words, the paragraph under consideration, although it speaks of five States, does not necessarily mean that when five States have deposited their instruments the Treaty will come into force. The number actually required depends on the influence of the declarations made under Article 37(3)(a): it may be anything between five and any other, possibly much higher number.

Paragraph (2): The time limit of three months is the usual one.

ARTICLE 39

Reservations to the Treaty

No reservations to this Treaty are permitted.

COMMENTS ON ARTICLE 39

Sole paragraph: It is now accepted practice of the law of treaties that, when a Treaty does not provide for any possibility of making reservations, it must expressly state the fact in order to avoid any misunderstanding.

ARTICLE 40

Denunciation of the Treaty

(1) Any Contracting State may denounce this Treaty by notification addressed to the Director General.

(2) Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4)(a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) The same shall apply in Contracting States other than the denouncing State in respect of marks whose international registration is owned by a resident or national of the denouncing State.

COMMENTS ON ARTICLE 40

Paragraph (1): This provision is subject to one exception stated in paragraph (3).

Paragraph (2): This provision is subject to certain qualifications stated in paragraph (4).

Paragraph (3): This provision is intended to give a certain degree of stability to the membership of the Union.

Paragraph (4)(a): This provision is intended to allow a certain period of time for owners of international registrations to look for means of protection other than under the Treaty in the denouncing State.

Paragraph (4)(b): This provision is intended to allow a certain period of time for owners of international registrations who are residents or nationals of the denouncing State to look for means of protection other than under the Treaty in any Contracting State other than the denouncing State.

ARTICLE 41

Signature and Languages of the Treaty

(1) This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Italian, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) This Treaty shall remain open for signature at Vienna until December 31, 1973.

COMMENTS ON ARTICLE 41

Paragraph (1): This provision follows the trend of treaties recently concluded under the aegis of the Paris Convention.

Paragraph (2): The comment made in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): This provision assumes that the Vienna Diplomatic Conference, now scheduled for May 7 to June 2, 1973, will take place as scheduled and will adopt the Treaty.

ARTICLE 42

Depositary Functions

(1) The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention and, on request, to the Government of any other State.

(3) The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

COMMENTS ON ARTICLE 42

Paragraph (1): This provision follows the contemporary trend of treaties recently concluded under the aegis of the Paris Convention.

Paragraph (2): The comment made in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): Article 102 of the Charter of the United Nations provides for the mandatory registration of treaties with the Secretariat of the United Nations.

Paragraph (4): The comment made in respect of paragraph (1) applies also to this paragraph.

ARTICLE 43

Notifications

The Director General shall notify the Governments of the States party to the Paris Convention of:

(i) signatures under Article 41;
(ii) deposits of instruments of ratification or accession under Article 37(2) and of any declaration accompanying them under Article 37(3)(a) and any withdrawal or limitation of such declarations made under Article 37(3)(b);
(iii) the date of entry into force of this Treaty under Article 38(1) and any amendment under Article 36(3)(a);
(iv) denunciations received under Article 40.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Treaty.

DONE at Vienna, on June . . ., 1973.

DRAFT REGULATIONS TRT/DC/2

UNDER THE TRADEMARK REGISTRATION TREATY

(prepared by the International Bureau)

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RULE 1

Abbreviated Expressions

1.1 *"Treaty"*

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

1.2 *"Chapter" and "Article"*

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

[1.3 *Associations*

References to legal entities in these Regulations shall be construed as references also to associations referred to in Article 4(5).]

RULES CONCERNING CHAPTER I

RULE 2

Duly Appointed Representatives

2.1 *Number of Duly Appointed Representatives*

(a) The applicant and the owner of the international registration may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or applicants, or by the owner or owners of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

(c) Members of a partnership or firm composed of attorneys or patent or trademark agents shall be regarded as one representative.

[(d) Any member of a partnership or firm composed of attorneys or patent or trademark agents may appoint as his agent any other member of the same partnership or firm.]

[(e) Any representative may appoint as his agent any of his employees.]

2.2 *Form of Appointment*

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b), (d) and (e).

(b) The appointment of any representative shall require:

(i) that his name appear as that of a representative in the international application, in the request or in any other document addressed to the International Bureau, and that such document bear the signature of the applicant or the owner of the international registration, or

(ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant or the owner of the international registration, be filed with the International Bureau.

(c) The signature shall not require any legalization or authentication.

(d) Where there are several applicants or owners of the international registration, the document containing or constituting the appointment shall be signed by all of them.

(e) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity or a partnership or firm of attorneys or patent or trademark agents, "name" shall mean the complete name of the legal entity or partnership or firm. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b), (d) and (e), it shall be regarded as nonexistent.

2.3 *Revocation, Lapse, or Renunciation of Appointment*

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. The signature shall not require any legalization or authentication.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative. The appointment shall preferably indicate the name of the other earlier appointed representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

RULE 3

The International Register of Marks

3.1 *Keeping of the Register*

(a) The International Register of Marks shall contain, in respect of each mark registered therein:

(i) all the indications that the applicant, the owner of the international registration or a national Office must or may furnish under the Treaty or these Regulations and has, in fact, furnished, and, where relevant, the date on which such indications were received by the International Bureau,

(ii) the amount of all fees received and the date or dates on which they were received by the International Bureau,

(iii) the dates and numbers of all international registrations and recordings,

(iv) any other indication whose recording is provided for by the Treaty or these Regulations.

(b) The Administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing entries and recordings therein and for preserving it from loss or other damage.

RULE 4

Applicants; Owners of International Registrations

4.1 *Several Applicants; Several Owners of the International Registration*

(a) If there are several applicants, the right to file an international application shall be recognized only if all of them are residents or nationals of Contracting States.

(b) If there are several owners of an international registration, the right to own such a registration shall be recognized only if all of them are residents or nationals of Contracting States.

4.2 *The Same Applicants for All Designated States*

(a) The applicant or applicants shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant or applicants for the purpose of all the designated States, that application shall be treated as if only the State first mentioned therein, and any other State for the purposes of which the same applicant or applicants are indicated as for the said first-mentioned State, had been designated.

RULE 5

Mandatory Contents of the International Application

5.1 *Indication that the International Application is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trademark Registration Treaty."

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered. Any subsequent change in address shall be recorded on request, free of charge, by the International Bureau.

5.3 *Reproduction of the Mark; Colors, Transliteration and Translation*

(a) Where the mark contains only letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm. x 21 cm.), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. It shall be of a quality admitting of direct reproduction by photography and printing processes.

(c) Where color is claimed, the international application shall contain a statement to that effect and shall be accompanied by

(i) either a reproduction of the mark in color in one copy satisfying the requirements set forth in paragraph (b) and a "color reproduction fee" whose amount is indicated in the Table of Fees,

(ii) or a reproduction of the mark in color in 50 copies and a reproduction of the mark in black and white in one copy containing a description of the colors in words and signs as specified in the Administrative Instructions, all copies satisfying the requirements set forth in paragraph (b).

(d) Any reproduction of a three-dimensional object whose shape constitutes or is part of the mark shall be accompanied by an indication to the effect that the mark is a three-dimensional mark. The reproduction may be accompanied by an indication to the effect that the mark is a sound mark.

(e) Marks which cannot, or whose picture cannot, be reproduced by the usual printing processes shall not be the subject of international applications.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is missing and it is equipped to effect the said transliteration itself, it shall proceed accordingly.

[(g) If the mark consists of or contains words which are part of the vocabulary of a language in general use in the country of residence or nationality of the applicant, and where such language is other than English or French, the international application shall contain a translation of such words in the language in which the international application is written. If the International Bureau finds that such translation is missing and it is equipped to effect the translation itself, it shall proceed accordingly.]

5.4 *List of Goods and/or Services*

(a) Each of the groups of terms pertaining to the same class of the International Classification shall be preceded by an indication of the number of the class, and the various groups shall follow in the numerical order of the corresponding classes.

(b) If, in the list of goods and/or services contained in the international application as filed, the terms are not or not properly grouped as provided in Article 5(1)(a)(iv), the International Bureau shall [, after having notified the applicant of its intention to do so and allowing him a reasonable time to react to the notification,] classify each term as required and constitute the required groups. If any of the terms does not permit classification in one class only of the International Classification, it shall be classified in each of the applicable classes. If the International Bureau finds that the term is incomprehensible, [it shall notify the applicant of its finding and shall allow him a reasonable time to react to the notification. Unless the applicant requests that the incomprehensible term be deleted from the list of goods and/or services,] it shall be left in the class or classes in which it was indicated in the

international aplication; if in respect of any incomprehensible term no class was indicated in the international application, it shall be classified in all classes of goods and services of the International Classification.

(c) The list of goods and/or services shall be the same for the purposes of all States designated in the international application as filed or as limited under Article 7(4). Where the international application, as filed or as limited under Article 7(4), indicates different goods and/or services in respect of different designated States, that application shall be treated as if only the State first mentioned therein, and any other States for the purposes of which the same list of goods and/or services is indicated as for the said first-mentioned State, had been designated.

5.5 Identification of States

(a) Identification of any State shall consist in writing its name in the international application in a manner sufficiently clear for the purposes of identification.

(b) Any identification of designated States which are not Contracting States shall be treated as if such identification had not taken place.

5.6 Choice Between National and Regional Marks

(a) The possibility of any choice referred to in Article 5(1)(a)(vi) shall be notified by the interested Contracting State to the International Bureau, and that Bureau shall publish a corresponding announcement.

(b) The choice referred to in Article 5(1)(a)(vi) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

**[*5.7 Certification and Collective Marks*

The indication referred to in Article 5(1)(a)(vii) shall consist of the words "certification mark desired" or "collective mark desired," respectively, appearing next to the name of the designated State to which the indication applies.]

*[*5.8 Applications Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 5(3)(b) shall be worded as follows: "The . . . [indicate name of the national Office] certifies that the present international application was filed with it on . . . [indicate the date]."

(b) The national Office of any Contracting State whose national law provides that international applications of residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the international applications filed with it since the sending of the last such note:

(i) the name of the applicant,
(ii) if the mark consists of one or more words, that word or words; if the mark consists of elements other than a word or words, a brief indication of what it consists of (for example, "figurative mark"),
(iii) the date on which the international application was filed with that Office,
(iv) the date on which the international application was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no international applications have been received by the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the international applications listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.]

RULE 6

Optional Contents of the International Application

6.1 Naming of a Representative

The international application may indicate a representative.

6.2 Claiming of Priority

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of a mark in the register of marks of a country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, a State designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and a State for which it was filed;
(ii) the date on which the earlier application was filed;
(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country, State or States, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it had not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the applicant or the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered to have been included in the declaration, and the number so furnished shall be published by the International Bureau.

(d) If the declaration referred to in Article 5(1)(b) claims the priority of more than one earlier application, the provisions of paragraphs (a) to (c) shall apply to each of them and the declaration shall specify which of the earlier applications relate to which of the goods and/or services listed in the international application.

6.3 Declaration of Intent To Use the Mark

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons authorized by him (it) in commerce with and/or on the territory of . . . [either insert "each of the States designated in this application" or indicate those of the States designated in respect of which the declaration is made] on and/or in connection with the goods and/or services listed in this application."

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

6.4 Declaration Under Articles 20(2) and 21(2)

(a) Any declaration under Article 20(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the allegation that the applicant owns a national registration or national registrations of the same mark in the said State or States,
(iii) indicate, in respect of each such national registration, its number.

(b) Any declaration under Article 21(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,

(ii) contain the allegation that the applicant owns a Madrid registration of the same mark in respect of the said State or States,

(iii) indicate the relevant registration number under the Madrid Agreement.

6.5 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

6.6 *Trade or Business of the Applicant*

The applicant may indicate in the international application the trade or business in which he is engaged.

RULE 7

Languages

7.1 *Language of the International Application*

The international application shall be in the English or in the French language.

7.2 *Language of the Request for Recording of Later Designations*

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

7.3 *Language of Registrations, Recordings, Annotations, Notifications, Correspondence*

(a) Registrations, recordings and annotations by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Notifications by the International Bureau and any correspondence between the International Bureau and the applicant or the owner of the international registration, or his duly appointed representative, shall be in the same language as that in which the international application was filed.

(c) Notifications by the national Offices to the International Bureau and letters or other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition proceeding attached to any notice of possible refusal shall be in the original language of such papers.

(d) Letters from the International Bureau to any national Office shall be in English or French according to the wish of the national Office; any matter in such letters quoted from the International Register shall be in the language in which such matter appears in that Register.

(e) Where the International Bureau is under the obligation to forward to the applicant any of the comunications referred to in paragraph (c), it shall forward them in the language in which it received them.

RULE 8

Form of the International Application

8.1 *Printed Forms*

(a) The international application shall be made on a printed form furnished free of charge, on request, by the International Bureau to prospective applicants, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

8.2 *Copies; Signature*

(a) Subject to Rule 5.3(c)(ii), the international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

(c) Where the applicant is a legal entity, the name of the legal entity shall be indicated in the place reserved for signatures and shall be accompanied by the signature or signatures of the natural person (persons) who is (are), according to the national law of the country under whose law the legal entity was established, entitled to sign for such legal entity.

8.3 *No Additional Matter*

(a) The international application shall not contain any matter and shall not be accompanied by any document other than those prescribed or permitted by the Treaty or these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if the international application is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat such document as if it had not been transmitted to it.

RULE 9

Fees Payable With the Filing of the International Application

9.1 *International Application Fee and Individual State Designation Fees*

(a) The fees payable with the international application shall be:

(i) an "international application fee," and, where applicable, the color reproduction fee referred to in Rule 5(3)(c)(i), and

(ii) an "individual State designation fee" for every designated State.

(b) The amount of the international application fee is indicated in the Table of Fees.

(c) The amounts of the individual State designation fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State designation fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall, subject to the following provisions, be free to determine the amount of the individual State designation fee applicable to it:

(i) Each Contracting State shall communicate the amount in Swiss francs of the individual State designation fee to the International Bureau each year before the end of the month of June. If the said communication is not made within the said time limit, the amount last communicated shall remain applicable.

(ii) The amount of the individual State designation fee may vary only according to the number of classes to which the goods and/or services listed in the international application belong according to the International Classification. ** [It may vary also according to whether the mark is or is not a certification mark or collective mark.]

(iii) The amount of the individual State designation fee shall not exceed 75% of the total amount of any filing, class, examination, registration or publication fees which would be payable if the application were an application for registration in the national register of marks.

9.2 *Standard State Designation Fees*

Any Contracting State may require that, in each case where it is designated, a "standard State designation fee," whose amount is indicated in the Table of Fees, shall be

payable instead of the individual State designation fee referred to in Rule 9.1(ii).

[9.3 *Fees Payable in Special Cases*

(a) If the International Bureau finds that the requirement of transliteration or translation contained in Rule 5.3(f) and (g) has not been complied with, or that the requirement of proper grouping of the goods and/or services contained in Rule 5.4(b) has not been complied with, it may charge the applicant a "transliteration fee," a "translation fee," or a "classification fee," as the case may be.

(b) If the indication of the applicant's trade or business exceeds twenty words, the International Bureau may charge the applicant a fee.

(c) The amounts of the fees referred to in paragraphs (a) and (b) are indicated in the Table of Fees.]

9.4 *Exemption from Certain Fees*

Where the owner of the international registration of a mark registered under the Madrid Agreement for certain goods and/or services applies for the international registration of the same mark for the same goods and/or services under the Treaty at least five years before the expiration of the then current term of protection under the Madrid Agreement and files a declaration under Article 21(2), he shall be exempt from the individual or standard State designation fee, as the case may be, in respect of any Contracting State in which his mark is then protected by virtue of the Madrid Agreement.

RULE 10

Mandatory Contents of the Request for Recording of Later Designations

10.1. *Indication that the Request is for Recording of Later Designations*

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration requests the recording in the International Register of Marks of the following later designations made under the Trademark Registration Treaty."

10.2 *Indications Concerning the Applicant or the Owner of the International Registration*

The provisions of Rule 5.2 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(ii)

10.3 *Identification of the International Application or International Registration*

(a) The international application shall be identified by a copy of the same and * [, where it was filed direct with the International Bureau,] the date on which it was filed with or mailed to the International Bureau * [or, where it was filed through the intermediary of a national Office, the name of that Office and the date on which it was received by or mailed to the said Office].

(b) The international registration shall be identified by its international registration number and date.

10.4 *Identification of the Later Designated States*

The provisions of Rule 5.5 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(iv).

10.5 *Indication of the Choice Between National and Regional Marks*

The choice referred to in Article 6(2)(a)(v) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

** [10.6 *Certification and Collective Marks*

The indication referred to in Article 6(2)(a)(vi) shall consist of the words "certification mark desired" or "collective mark desired," respectively, appearing next to the name of the designated State to which the indication applies.]

* [10.7 *Requests Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 6(3)(b) shall be worded as follows: "The . . . [indicate the name of the national Office] certifies that the present request was filed with it on . . . [indicate the date]."

(b) The national Office of any Contracting State whose national law provides that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the requests filed with it since the sending of the last such note:

(i) the name of the applicant or the owner of the international application,

(ii) the international registration number and date to which the request refers or, where such number and date are not available, the indication referred to in Rule 5.8(b)(ii), together with, where the international application was filed through the intermediary of the national Office, the date on which it was so received by such Office and the date on which it was mailed to the International Bureau or, where the international application was filed direct with the International Bureau, the date on which it was so filed or the date on which it was mailed to the International Bureau,

(iii) the date on which the request was filed with that Office,

(iv) the date on which the request was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no requests have been filed with the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the requests listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.]

RULE 11

Optional Contents of the Request for Recording of Later Designations

11.1 *Claiming of Priority*

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b).

11.2 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant/owner of the international registration declares that he (it) intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or through persons authorized by him (it) in commerce with and/or on the territory of . . . [either insert "each of the States designated in this request" or indicate those of the States designated in respect of which the declaration is made] on and/or in connection with the goods and/or services listed in this request."

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as

but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

11.3 *Declarations Under Articles 20(2) and 21(2)*

The provisions of Rule 6.4 shall apply, *mutatis mutandis*, to any declaration under Articles 20(2) or 21(2), where such declaration is included in the request for the recording of later designations.

11.4 *List of Goods and/or Services*

The concept of limitation referred to in Article 6(2)(b), second sentence, is defined in Rule 22.2.

11.5 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

RULE 12

Form of the Request for Recording of Later Designations

12.1 *Printed Forms*

(a) The request referred to in Article 6(2)(c) shall be made on a printed form furnished free of charge, on request, by the International Bureau to applicants, owners of international registrations, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

12.2 *Copies; Signature*

(a) The request referred to in Article 6(2)(c) and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant or the owner of the international registration.

(c) Rule 8.2(c) shall also apply to owners of international registrations.

12.3 *No Additional Matter*

Rule 8.3 shall also apply to requests for recording later designations.

RULE 13

Fees Payable With the Request for Recording of Later Designations

13.1 *International Later Designation Fee and Individual State Later Designation Fees*

(a) The fees payable with the request for the recording of the later designation of any Contracting State shall be the following:

(i) an "international later designation fee," and
(ii) an "individual State later designation fee" for every later designated State.

(b) The amount of the international later designation fee is indicated in the Table of Fees.

(c) The amount of the individual State later designation fee shall be the same as that of the individual State designation fee referred to in Rule 9:1.

13.2 *Standard State Later Designation Fees*

Any Contracting State may require that, in each case where it is the subject of a later designation, a "standard State later designation fee," whose amount shall be the same as that of the standard State designation fee referred to in Rule 9.2, shall be payable instead of the individual State later designation fee referred to in Rule 13.1(ii).

13.3 *Exemption from Certain Fees*

The provisions of Rule 9.4 shall also apply, *mutatis mutandis*, in connection with the individual or standard State later designation fee, as the case may be.

RULE 14

Defects in the International Application

14.1 *Invitations Under Article 7*

Any invitation under Article 7(2)(a), (3)(a) or (4)(a) shall be sent by registered mail.

14.2 *Minimum Amount Under Article 7*

The minimum amount referred to in Article 7(2)(a)(ix) and (3)(a)(i) shall be an amount equivalent to the amount of the international application fee referred to in Rule 9.1(a)(i).

14.3 *Notification, and Reimbursement of Certain Fees, Under Article 7(5)*

Where the International Bureau declines the international application, it shall notify the applicant by registered letter stating the grounds for declining and shall reimburse to him all fees received from his except an amount equivalent to the international application fee referred to in Rule 9.1(a)(i).

* [14.4 *Notification of the National Office*

Where the international application is treated as provided for in Article 7(6), the International Bureau shall inform accordingly the national Office through the intermediary of which the application was filed.]

RULE 15

Defects in the Request for Recording of Later Designations

15.1 *Application of Rule 14*

The provisions of Rule 14 shall apply, *mutatis mutandis*, in respect of Article 8, provided that the amount referred to in Rules 14.2 and 14.3 shall be an amount equivalent to the amount of the international later designation fee referred to in Rule 13.1(a)(i).

RULE 16

Procedure Where Avoiding the Effects of Declining is Sought

16.1 *Recording and Publication Under Article 9(3)*

(a) The fact of having received a copy of a petition under Article 9(1)(i) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which said copy was received.

(b) The information to be published under Article 9(3) shall indicate the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

16.2 *Information Available to National Offices*

On request of the applicant or owner of the international registration, or of the interested national Office, the International Bureau shall send to that Office a copy of the file of the declined international application or declined request for recording later designations, together

with a memorandum setting out the grounds for and the various steps leading to the declining of the said application or request.

16.3 *Information Furnished by the National Office*

Any request by a national Office referred to in Article 9(2)(i) shall indicate the grounds on which it is based.

RULE 17

Publication of International Registrations and Recordings of Later Designations

17.1 *Contents of Publication of International Registrations*

(a) The publication of any international registration shall contain:

(i) the name and address of the owner of the international registration, together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,

(iii) the list of goods and/or services,

(iv) the names of the designated States and, where applicable, after the name of each such State, an indication concerning the choice referred to in Rule 5.6 **[and/or the indication referred to in Rule 5.7],

(v) the international registration date,

(vi) the international registration number,

(vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed,

(viii) any indication under Article 11(3),

(ix) any declaration under Articles 20(2) and 21(2).

(b) The international registration number shall be a single serial number, followed by an oblique stroke and a zero.

17.2 *Contents of Publication of Recordings of Later Designations*

(a) The publication of any recording of a later designation shall contain:

(i) the name of the owner of the international registration,

(ii) the international later designation number,

(iii) the date of the recording of the later designations,

(iv) the names of the later designated States and, where applicable, after the name of each such State, and indication concerning the choice referred to in Rule 10.5 **[and/or the indication referred to in Rule 10,6],

(v) if, for the purposes of any later designated State, the list of goods and/or services is more limited than the list of goods and/or services which was published with the international registration, the more limited list,

(vi) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed,

(vii) any indication under Article 11(3),

(viii) any declaration under Articles 20(2) and 21(2).

(b) The international later designation number shall consist of the international registration number of the international registration to which the later designation refers, followed by an oblique stroke and a number indicating the ordinal number of the request for later designations in question among all the requests for later designations referring to the same international registration.

(c) Where the recording of any later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the said publication shall, itself, contain the elements indicated in paragraph (a)(i) and (iv) to (viii), and the number of the said publication shall consist of the number referred to in Rule 17.1(b) and the number or numbers referred to in paragraph (b).

RULE 18

Notification of International Registrations and Recordings of Later Designations

18.1 *Form of Notifications*

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

(i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,

(ii) separate reprints made of the publication by the International Bureau of each international registration referred to in the said list,

(iii) a copy of the international application or the request for the recording of later designations if it contains a declaration of intent to use made under Article 18(4).

18.2 *Frenquency of Notifications*

The notification shall be effected on the same day as that on which the issue of the Gazette is published which contains the matter from which the reprints referred to in Rule 18.1 are made.

RULE 19

Refusals; Notices of Possible Refusal

19.1 *Notifying the International Bureau; Grounds*

(a) Any notification under Article 12(2)(a) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each Contracting State. The notification shall, in any case, contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,

(ii) the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements,

(iii) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,

(iv) if it relates to some only of the goods and/or services listed, identification of those to which it relates,

(v) the grounds referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein and a copy of the list of goods and/or services (in the original language) pertaining to such mark, and, when the notice of possible refusal specifies the grounds by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said grounds are specified,

(vi) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The form referred to in paragraph (a) shall be prepared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the grounds for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such grounds may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other grounds and for other possible indications.

19.2 *Notifying the Owner of the International Registration; Publication*

(a) The notification referred to in Article 12(3)(a) shall indicate the date on which any notification made under Article 12(2)(a) was received by the International Bureau and shall include a copy thereof. Subject to Rule 19.5, the International Bureau shall effect any notification referred to in Article 12(3)(a) promptly after the receipt of the notification referred to in Article 12(2)(a).

(b) The publication of the notification referred to in Article 12(3)(a) shall be effected promptly and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates, and the name of the owner of the international registration,

(ii) the name of the State whose national Office transmitted the notification,

(iii) a statement to the effect that a notification under Article 12(2)(a) was received.

19.3 *Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification by the national Office under Article 12(4)(a) shall be effected promptly after the date on which the decision of refusal becomes final. The notification shall contain:

(i) an indication that it relates to a final decision of refusal,

(ii) the indications referred to in Rule 19.1(a)(i) and (ii),

(iii) where the decision is that of a court, a copy of the final decision; where the decision is not that of a court, the grounds given in the final decision, preferably in the same manner as that indicated in Rule 19.1(b);

(iv) if the notification relates to some only of the goods and/or services listed, identification of those to which it relates;

(v) the name of the authority which pronounced the decision, the number, if any, and the date of such decision, and

(vi) the date on which the decision became final.

(b) The notification by the International Bureau under Article 12(4)(a) shall be effected as soon as possible and shall include a copy of the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and an indication of the date of receipt of such notification by the International Bureau.

(c) The details of the recording referred to in Article 12(4)(a) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(a) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a)(i), (ii) and (iv) to (vi), as well as the name of the State whose authorities have pronounced the final decision of refusal and the name of the owner of the international registration.

19.4 *Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)*

(a) The notification under Article 12(4)(b) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 19.1(a)(i) and (ii), the number, if any, and the date of the decision, and the date on which the decision became final.

(b) The publication referred to in Article 12(4)(b) shall be effected promptly and shall consist of the elements referred to in paragraph (a), as well as the name of the owner of the international registration and the name of the State whose authorities have pronounced the final decision.

19.5 *Belated Notifications*

If any notification referred to in Article 12(2)(a) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification and shall treat such notification as if it had not been effected. It shall send a copy of the notification to the owner of the international registration.

RULE 20

Final Decisions of Cancellation

20.1 *Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification referred to in Article 13(2) shall be effected promptly after the date on which the decision of cancellation becomes final and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,

(ii) the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements,

(iii) if the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,

(iv) the name of the authority which pronounced the final decision,

(v) the number, if any, and the date of such decision,

(vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(2) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(2) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a),

as well as the name of the State whose authorities have pronounced the final decision of cancellation and the name of the owner of the international registration.

RULE 21

Changes in Ownership

21.1 *Request for Recording of Change in Ownership*

(a) The indication referred to in Article 14(1)(b)(i) shall preferably be worded as follows: "The undersigned requests that the following change in ownership concerning the international registration identified herein be recorded."

(b) Rule 5.2 shall apply, *mutatis mutandis*, to the indications concerning the new owner referred to in Article 14(1)(b)(iii).

(c) The designated States referred to in Article 14(1)(b)(iv) shall be identified by their names in a manner sufficiently clear for the purpose, provided that, where the request relates to all the States designated in the existing international registration, they may be identified by a statement to that effect.

(d) The goods and/or services referred to in Article 14(1)(b)(iv) shall be identified as follows:

(i) where the request relates to all of the designated States and all of the goods and/or services listed in respect of each of those States, by a statement to that effect,

(ii) where the request relates to all of the designated States, and the list of goods and/or services, while being the same for each, is, in respect of some or all of the designated States, more limited than in the international registration, by a new list and by a statement to the effect that it applies to all of the designated States,

(iii) where the request relates to one, some or all of the designated States in respect of that State or those States for which the list of goods and/or services is the same as in the existing international registration, by a statement to that effect, and, in respect of that State or those States for which the list of goods and/or services is more limited than the list of goods and/or services in the existing international registration, by a new list.

(e) The attestation referred to in Article 14(1)(c) shall be worded as follows: "According to evidence produced before this Office, . . . [insert the name of the new owner] appears to be successor in title of . . . [insert the name of the earlier owner] to the extent described in the present request, and the conditions referred to in Article 14(1)(c) of the Trademark Registration Treaty appear to be fulfilled." The attestation shall be dated and shall bear the stamp or seal of the national Office and the signature of an official thereof.

(f) The amount of the fee referred to in Article 14(1)(d) is indicated in the Table of Fees.

21.2 *Publication Where the Change in Ownership is Total*

(a) Where the change in ownership concerns all of the designated States and all of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain:

(i) an indication that the change in ownership concerns all the designated States and all the goods and/or services,

(ii) the name and address of the new owner together with any indication of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(iii) the name of the earlier owner,

(iv) the date on which the International Bureau received the request,

(v) a reference to all the prior publications concerning the international registration except those which have been superseded by later publications in respect of that registration.

(b) The publication shall be effected under the number of the international registration and, where applicable, the numbers of later designations to which it refers, followed by an oblique stroke and a number (1, 2, 3 . . .).

21.3 *Publication Where the Change in Ownership is Partial*

(a) Where the change in ownership concerns fewer than all of the designated States and/or some only of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain two parts, one concerning the new owner, the other the earlier owner.

(b) The part concerning the new owner shall contain:

(i) an indication that the publication is effected persuant to a request for the recording of a change in ownership,

(ii) the date on which the International Bureau received the request,

(iii) the number under which the part concerning the earlier owner is published,

(iv) the name and address of the new owner together with any indication of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(v) all the indications which, prior to the date referred to in (ii), above, were published in respect of the international registration and which have not been superseded by later publications in respect of that registration, except those indications which solely concern designated States and goods and/or services in respect of which ownership is retained by the earlier owner.

(c) The part concerning the earlier owner shall contain:

(i) an indication that the publication concerns an existing international registration and contains those elements of that registration which, after the recording of the change in ownership concerning that registration, continue to concern the earlier owner,

(ii) the number under which the part concerning the new owner is published,

(iii) the date on which the International Bureau received the request,

(iv) all the indications which, prior to the date referred to in (iii), above, were published in respect of the international registration and have not been superseded by later publications in respect of that registration, except those indications which, because of the change in ownership, no longer concern the earlier owner.

(d) Each part shall have a number which shall consist of the international registration number and, where applicable, the international later designation numbers, followed by an oblique stroke, the words "Republication With Changes," and,

(i) in respect of the part concerning the earlier owner, a letter (A, B, C, D . . .),

(ii) in respect of the part concerning the new owner, a number (1, 2, 3, 4 . . .).

21.4 *Notification of Recording of Changes*

(a) The notification referred to in Article 14(1)(d) shall be effected by sending separate reprints of the publication referred to in Rules 21.2 and 21.3.

(b) As far as notifications to designated Offices are concerned, Rules 18.1(i) and 18.2 shall apply, *mutatis mutandis*.

21.5 *Notification of Declining of the Recording*

The notification referred to in Article 14(2) shall be effected by registered letter. The letter shall state the grounds for declining.

21.6 *Denial*

(a) The notification referred to in Article 14(4)(c) shall:

(i) refer to the fact of the denial,
(ii) identify the authority that pronounced the denial and the date on which it was pronounced,
(iii) indicate the relevant numbers referred to in Rule 21.2(b) and 21.3(d),
(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 14(4)(c) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the notification referred to in paragraph (a),
(iii) the identification of the publication of the recording effected under Article 14(1)(d).

(c) The notification referred to in Article 14(4)(c) shall be sent to the earlier and the new owners and to the national Office which has notified the denial.

RULE 22

Recording of Limitations of the List of Goods and/or Services

22.1 *Request for Recording of Limitation of the List*

(a) The request for recording referred to in Article 15(1) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,
(ii) the international registration number,
(iii) the desired limitation of the list of goods and/or services,
(iv) if the request relates to some only of the designated States, identification of those States to which it relate,
(v) if the request relates to one only of the designated States and conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a certified copy of such decision and, if the decision is in a language other than English or French, a certified translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2) is indicated in the Table of Fees.

22.2 *Concept of Limitation*

(a) Subject to paragraph (c), any request under Article 15 shall be regarded as conforming with the concept of limitation if it is presented in either of the following forms:

(i) it asks for the deletion of one or more terms in the list of goods and/or services,
(ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),
(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") which, from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *pineapples* (inserted word) *provided that they are* (linking words) *canned fruits* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk product" by "cheese").

(c) For the purposes of Rule 22.1(a)(v), any change in the list of goods and/or services decided upon by the national Office or other competent authority concerned shall be deemed to conform with the concept of limitation.

22.3 *Recording, Publication, and Notification, of Limitation of the List*

(a) If the request complies with the prescribed requirements, the International Bureau shall record the indications referred to in Rule 22.1(a) and the date on which the request was received. If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly.

(b) The publication and the notification referred to in Article 15(2) shall contain the indications referred to in Rule 22.1(a), the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements, and the date of the recording.

22.4 *Declining the Recording of Limitation of the List*

The notification referred to in Article 15(3) shall include the reasons for declining the recording of the limitation of the list of goods and/or services.

22.5 *Non-Admission by Designated State*

(a) The notification by the national Office referred to in Article 15(4) shall:

(i) refer to the fact of non-admissibility,
(ii) identify the authority that pronounced the decision and the date on which it was pronounced,
(iii) indicate the relevant international registration number and date,
(iv) indicate the name of the owner of the international registration,
(v) contain a brief indication of the ground(s) for the non-admissibility.

(b) The annotation and the publication referred to in Article 15(4) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the notification referred to in paragraph (a),
(iii) the identification of the publication of the recording effected under Article 15(1),
(iv) an indication of the fact of restitution, together with the identification of the publication which contained the now restituted elements of the international registration.

(c) The notifications by the International Bureau referred to in Article 15(4) shall be sent to the owner of the international registration and to the national Office which has notified the non-admissibility.

RULE 23
Renewal

23.1 *Reminder by the International Bureau*

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect, reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative Instructions. The reminder shall be sent at least 6 months before the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, or any error in the reminder, shall not affect the expiration date.

23.2 *Demand for Renewal*

(a) The demand for renewal referred to in Article 16(3)(a) shall preferably be made on a printed form furnished free of charge by the International Bureau together with the reminder referred to in Rule 23.1. The demand shall, in any case, indicate its purpose and contain:

(i) the name of the owner of the international registration, his residence and nationality, and his address,
(ii) the international registration number,
(iii) if the demand relates to fewer than all of the designated States for the purposes of which the person presenting the demand is the owner of the international registration, the identification of that State or those States to which the demand relates.

(b) The demand shall be signed by the owner of the international registration. Where there are several owners, the signature of one of them shall suffice.

(c) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or a request for recording a limitation in the list of goods and/or services. Rule 8.3 shall also apply to demands for renewal.

23.3 *International Renewal Fee and Individual State Renewal Fees*

(a) The fees payable under Article 16(3)(a) shall be the following:

(i) an "international renewal fee," and, where applicable, the "renewal surcharge" referred to in Article 16(3)(a),
(ii) an "individual State renewal fee" for every designated State to which the demand relates.

(b) The amount of the international renewal fee and the amount of the renewal surcharge are indicated in the Table of Fees.

(c) The amounts of the individual State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State renewal fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall be free to determine the amount of the individual State renewal fee applicable to it, subject to the provisions of Rule 9.1(d)(i) and (ii) and provided that the amount of the said fee shall not exceed the amount of the renewal fee which would be payable if the demand were for the renewal in the national register of marks of the said State for a comparable period of time.

23.4 *Standard State Renewal Fees*

Any designated State may require that, whenever a request for renewal relates to it, a "standard State renewal fee," whose amount is indicated in the Table of Fees, shall be payable instead of the individual State renewal fee referred to in Rule 23.3(a)(ii).

23.5 *Imperfect Demands*

(a) Where, within the time limits fixed in Article 16(3)(a), the International Bureau receives:

(i) a demand which does not conform with Rule 23.2, or
(ii) a demand but no payment or insufficient payment to cover the renewal fees and any surcharge that is due, or
(iii) money which appears to be intended to cover fees connected with renewal but no demand,

the International Bureau shall, whenever practicable, promptly invite the owner of the international registration to present a correct demand, to pay or complete the renewal fees and any surcharge that is due, or to present a demand, as the case may be.

(b) Failure to send or receive the invitation referred to in paragraph (a), or any delay in dispatching or receiving such invitation, or any error in the invitation, shall not prolong the time limits fixed in Article 16(3)(a).

23.6 *Recording, Publication, and Notification*

(a) Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal, shall, subject to paragraph (b), publish the indications referred to in Rule 23.2(a) together with an indication of the date on which the renewal shall expire, and shall notify the owner of the international registration and each designated Office of the said indications and the said date.

(b) Where the address, residence or nationality of the owner of the international registration is the same as in the last publication concerning the international registration, the indication of the address, residence or nationality of the owner shall not be included in the publication and the notification.

23.7 *Declining the Demand*

Where the time limits fixed in Article 16(3)(a) are not respected or where the demand does not conform with the requirements of Rule 23.2 or the fees (including, where applicable, any surcharge) are not paid as prescribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by registered letter stating the reasons for declining the demand.

23.8 *Reimbursement of Certain Fees*

Where, under Rule 23.7, the International Bureau declines the demand, it shall reimburse to the owner of the international registration all fees received from him except an amount equivalent to the international renewal fee referred to in Rule 23.3(a)(i).

RULE 24
Declarations of Actual Use

24.1 *Information on Requirements Concerning Routine Declarations of Actual Use*

The national Office of any Contracting State whose national law requires the filing of routine declarations referred to in the first sentence of Article 18(3)(d) shall inform the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law and state whether the attachment of specimens or facsimiles to routine declarations of actual use is required by the national law. The information shall be promptly published.

24.2 *National Forms*

The national Office of any Contracting State referred to in Rule 24.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 18(3)(d). The International Bureau shall furnish such forms free of charge to interested persons.

24.3 *International Form*

(a) Where the declaration referred to in Article 18(3)(d) is not made on a national form according to Rule 24.2, it shall be made on a form ("international form") consisting of the following statement and shall be signed by the owner of the international registration:

"The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . ① on . . . ②; that the mark which is the subject of the international registration herein identified is now in use by and through . . . ③ in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . ④; that such use commenced on . . . ⑤; and that the mode or manner in which the mark is used is:

☐ on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) ⑥;

☐ on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) ⑥;

☐ in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) ⑥;

☐ other [recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use]."

[① Insert name of State; ② Insert international registration date or, if applicable, recording date of the later designation of such State; ③ Insert "the undersigned owner" and/or, if applicable, the name and address of the person and/or persons using the mark under the authority of the owner in the State; ④ Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used; ⑤ Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or service to which each such date relates]; ⑥ The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The declaration shall be filed in the same language as the international application to which it relates.

(d) The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(e) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or of the displays associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith, shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(f) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently from the statement set out in paragraph (a) shall produce the same effect.

RULE 25

Declarations Concerning Earlier National or Madrid Registrations

25.1 *Separately Filed Declarations*

(a) Any separately filed declaration under Article 20(2) shall:

(i) specify the designated State or States in respect of which it is made,

(ii) contain the allegation that the owner of the international registration owned a national registration or national registrations in the said State or States on the international registration date or the international later designation date, as the case may be,

(iii) indicate, in respect of each such national registration, its number,

(iv) indicate the international registration number of the international registration to which it relates.

(b) Any separately filed declaration under Article 21(2) shall:

(i) specify the designated State or States in respect of which it is made,

(ii) contain the allegation that the owner of the international registration owned a registration under the Madrid Agreement in respect of the said State or States on the international registration date or the international later designation date, as the case may be,

(iii) indicate the number of the relevant Madrid registration,

(iv) indicate the international registration number of the international registration to which it relates.

25.2 *Certification of National Registrations*

The certification of the copy of any national registration referred to in Article 20(2) shall be in the English or French language, shall be signed by a person authorized by the national Office to effect certifications and shall indicate the date to which the certification refers. That date shall be the international registration date or the international later designation date, as the case may be, or, where the certification is made before international registration or recording of the later designation is effected, the date on which the certification is effected. In the latter case, the national Office effecting the certification shall, on the request of the International Bureau presented once the said registration or recording is effected by it, indicate to that Bureau any change which might have occurred in respect of the national registration between the date to which the certification referred and the international registration date or the recording date of the later designation, as the case may be.

25.3 *Defects*

(a) The International Bureau shall promptly notify the applicant or the owner of the international registration of any defect in the declaration made under Article 20(2) or Article 21(2), including the absence of the certified copy referred to in Article 20(2) and any defect in the certification thereof as provided in Rule 25.2.

(b) As long as any defect referred to in paragraph (a) is not corrected, the International Bureau shall not record, publish or notify the said declaration.

25.4 *Publication; Notification*

(a) Unless effected by virtue of Rule 17.1(a)(ix) or Rule 17.2(a)(vii), the publication of any declaration under Article 20(2) or Article 21(2) shall indicate:

(i) the fact that the publication relates to a declaration made under Article 20(2) or 21(2), as the case may be,
(ii) the State or States in respect of which the declaration was made and the numbers of the relevant national or Madrid registrations,
(iii) the international registration number of the international registration to which the declaration relates,
(iv) the name of the owner of the international registration.

(b) Unless effected by virtue of Rule 18.1, the notification of any declaration under Article 20(2) or 21(2) shall consist of an indication that the declaration made under Article 20(2) or 21(2), as the case may be, was recorded by the International Bureau and shall be accompanied by a copy of the declaration.

RULE 26

Transmittal of Documents to the International Bureau

26.1 *Place and Mode of Transmittal*

International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau.

26.2 *Date of Receipt of Documents*

Any document received by the International Bureau through deposit or mail shall be considered to have been received on the day on which it is actually received by such Bureau, provided that, when it is actually received after office hours, or on a day when the Bureau is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau is open for business.

RULE 27

Calendar; Computation of Time Limits

27.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

27.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire on the day on which the last day of the count has been reached.

27.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document is filed or the required fee is paid.

27.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agencies falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances exists.

RULE 28

Payment of Fees

28.1 *Payment to the International Bureau*

All fees payable under the Treaty and these Regulations shall be payable to the International Bureau.

28.2 *Applicable Fee Schedule*

The fees payable shall:

(i) where they concern an international application or a request for the recording of a later designation, be the fees in force on the date the international application or the request for the recording of the later designation is received by the International Bureau *[or, where the application or request has been filed through the intermediary of a national Office under Article 5(3), on the date on which it was received by that Office],
(ii) where they concern a demand for renewal, be the fees in force on the date which precedes by six months the starting date of the term of renewal.

28.3 *Currency*

(a) Subject to paragraph (b), all fees payable under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has agencies, the Administrative Instructions may, under specified conditions, allow exceptions to the provisions of paragraph (a).

28.4 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any of its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.

28.5 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

(i) the name and address, as provided in Rule 5.2(a), of the natural person or legal entity making the payment.

(ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a bank account or to the postal cheque account of the International Bureau, or by cheque. The Administrative Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates, unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which it relates, in the manner to be provided for in the Administrative Instructions.

28.6 *Effective Date of Payment*

Any payment shall be considered to have been received by the International Bureau on the date indicated hereinbelow:

(i) if the payment is made in cash to the cashier of the International Bureau, on the date on which such payment is made,

(ii) if the payment is made by debiting a deposit account with the International Bureau pursuant to a general authorization to debit, on the date on which the international application, the request for the recording of later designation, the demand for renewal or other document entailing the obligation to pay fees is received by the International Bureau, or, in the case of a specific authorization to debit, on the date on which the specific authorization is received by the International Bureau,

(iii) if the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, on the date on which such account is credited,

(iv) if the payment is made by cheque, on the date on which the cheque is received by the International Bureau, provided that it is honored upon presentation to the bank on which the cheque is drawn.

RULE 29

Withdrawals and Renunciations

29.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before registration is effected and preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches it before recording is effected and preparations for publication have been completed.

29.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

29.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 29.1 and 29.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be.

(b) The International Bureau shall acknowledge receipt of the communication referred to in paragraph (a). In the case of any withdrawals, the International Bureau shall reimburse to the applicant or the owner of the international registration any State designation fee and any State later designation fee which it has received from him in connection with any State affected by the withdrawal.

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

RULE 30

Fees Belonging to the Designated Offices

30.1 *Individual State Fees Belonging to the Designated Offices*

(a) Any individual State designation fee, any individual State later designation fee and any individual State renewal fee shall belong to the designated Office of the State in respect of which it was paid.

(b) The International Bureau shall in every calendar year transfer to any interested designated Office the fees referred to in paragraph (a) that are collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year.

(c) Further details shall be provided in the Administrative Instructions.

30.2 *Standard State Fees Belonging to the Designated Offices*

(a) Any standard State designation fee, any standard State later designation fee and any standard State renewal fee collected by the International Bureau shall belong to the Offices of the designated States which have availed themselves of the possibilities provided for in Rule 9.2, 13.2 and 23.4.

(b) The total amount of the standard State fees referred to in paragraph (a) that are collected by the International Bureau in respect of international registrations, recordings of requests for later designation, and recordings of renewals, effected in any given calendar year, shall be distributed among and transferred to the Offices of the designated States referred to in paragraph (a) in the course of the next subsequent calendar year in proportion to the number of cases in which they have been designated, provided that the number resulting for each Office has first been multiplied:

(i) by 2, if the national law provides only for examination of "absolute grounds of nullity,"

(ii) by 3, if the national law provides for examination as to whether there is conflict with another mark ("relative grounds of nullity") and if such examination is

carried out only where there is third-party opposition,

(iii) by 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,

(iv) by 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

(c) Further details shall be provided in the Administrative Instructions.

RULE 31

Choice of the Standard State Fee System

31.1 *Choice and Abandonment of the Standard State Fee System*

(a) Any Contracting State wishing to avail itself of the possibilities provided for in Rules 9.2, 13.2 and 23.4 may do so by notifying the Director General accordingly. If the notification accompanies the said State's instrument of ratification of or accession to the Treaty, it shall become effective when that State becomes bound by the Treaty; if it is made at a later date and reaches the Director General before the end of the month of June of any year, it shall become effective from the end of that year, and, if it reaches the Director General after the month of June of any year, it shall become effective from the end of the next subsequent calendar year; it shall remain effective until, pursuant to a communication under Rules 9.1(d)(i) and 23.3(d), the said State starts to benefit from the individual State fee system, unless paragraph (b) applies.

(b) Any Contracting State availing itself of the possibilities provided for in paragraph (a) may abandon the same by notifying the Director General accordingly. If the notification reaches the Director General before the end of the month of June of any year, it shall become effective from the end of that year, and, if it reaches the Director General after the month of June of any year, it shall become effective from the end of the next subsequent calendar year.

(c) Any notification indicating the desire of a Contracting State to avail itself of the standard State fee system shall be treated as a notification relating to all three of the possibilities referred to in Rules 9.2, 13.2 and 23.4, and any notification indicating the desire to abandon such system shall be treated as a notification relating to the abandonment of all three of those possibilities.

RULE 32

Absence of State Fees

32.1 *Lack of Communication of Individual State Fees*

Failure, on the part of any Contracting State not having availed itself of the possibilities referred to in Rule 31.1(a) or having abandoned such possibilities, to communicate to the International Bureau the amount of any individual State fee applicable to it shall be regarded as renunciation of the right to such fee.

RULE 33

Fees Belonging to the International Bureau

33.1 *Fees Belonging to the International Bureau*

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Rule 30, shall belong to the International Bureau.

RULE 34

Recordings Effected by National Offices

34.1 *Notification of Certain Recordings Effected by National Offices*

The notification provided for in Article 19(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

34.2 *Annotation and Publication*

The Administrative Instructions shall provide for the extent to which annotations of any changes notified under Article 19(2) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter.

RULE 35

The Gazette

35.1 *Contents and Title of the Gazette*

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/*Gazette internationale de marques*" (hereinafter referred to as "the Gazette").

(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

35.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

35.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.

(b) The Administrative Instructions shall identify those portions which require translation (for example, the lists of goods and/or services) and those portions which do not require translation (for example, the names of the designated States).

(c) Matters which can be easily understood even if not translated (for example, the names of the designated States), or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/*Renouvellement*") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.

(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

35.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

35.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national Office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.

(b) The International Bureau shall make the requested number of copies available to the national Office:

(i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention by the Contracting State of which the said Office is the national Office,

(ii) at half of the ordinary subscription or sale price for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

35.6 *Further Details*

Further details concerning the Gazette may be provided for in the Administrative Instructions.

RULE 36

Copies and Other Information Available to the Public

36.1 *Copies and Information Concerning International Applications and Registrations*

(a) Any person may obtain from the International Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of the international registration or any document in the file of any international application or registration.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information on any fact appearing in any document in the file of any international application or registration.

36.2 *Authentication of Documents Issued by the International Bureau*

No authority of any Contracting State shall ask for the authentication by any person or authority of certificates issued and of copies or other documents certified by the International Bureau, provided such certificates, certified copies or other certified documents bear the seal of the International Bureau and the signature of the Director General or a person acting under his authority.

RULE 37

Fees in the Case of Regional Marks

37.1 *Reference to Other Rules*

Rules 9, 13, 23.3, 23.4, 30 and 31 shall apply, *mutatis mutandis*, in respect of regional marks, provided that any communication under Rules 9.1(d)(i) and 23.3(d) and any notification under Rule 31 shall be made by the intergovernmental authority entrusted with the task of registering regional marks.

RULE 38

Procedure Where Correction of Errors of the International Bureau is Sought

38.1 *Time Limit Under Article 29*

The time limit referred to in Article 29(1) shall be:

(i) where the alleged error may be discovered on the basis of a notification sent by the International Bureau to the applicant or owner of the international registration, 2 months from the date of such notification,

(ii) where item (i) does not apply and the alleged error may be discovered on the basis of a publication of the International Bureau, 2 months from the date of such publication,

(iii) where neither item (i) nor item (ii) applies, 2 months from the date on which the error has been discovered by the applicant or the owner of the international registration.

38.2 *Recording and Publication Under Article 29(3)*

(a) The fact of having received a copy of a petition under Article 29(3) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The information to be published under Article 29(3) shall indicate the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

38.3 *Information Available to National Offices*

On the request of the applicant or owner of the international registration, or of the national Office with which a petition under Article 29(1) has been filed, the International Bureau shall send to that Office a copy of the relevant file, together with a memorandum setting out the opinion of the International Bureau concerning the alleged error.

38.4 *Information Furnished by the National Office*

Any request by a national Office referred to in Article 29(2) shall indicate the grounds on which it is based.

RULES CONCERNING CHAPTER II

RULE 39

Expenses of Delegations

39.1 *Expenses Borne by Governments*

The expenses of each delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

RULE 40

Absence of Quorum in the Assembly

40.1 *Voting by Correspondence*

(a) In the case provided for in Article 30(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

RULE 41

Administrative Instructions

41.1 *Establishment of Administrative Instructions; Matters Governed by Them*

The Director General shall establish Administrative Instructions. They shall deal with matters in respect of which these Regulations expressly refer to such Instructions and with details in respect of the application of these Regulations.

41.2 *Control by the Assembly*

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

41.3 *Publication and Effective Date*

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to the expiration of a period of 14 days after the publication date of that issue of the Gazette in which it has been published.

41.4 *Conflict with the Treaty and the Regulations*

In the case of conflict between any provision of the Administrative Instructions and any provision of the Treaty or of these Regulations, the later shall prevail.

ANNEX TO THE REGULATIONS

TABLE OF FEES

The fees marked by an asterisk apply to the following States . . . [here will be named all the States which have chosen the standard fee system (see Rules 9.2, 13.2 and 23.4]. Where, either because of the choice exercised by the applicant or owner of the international registration under Article 5(1)(a)(vi) or 6(2)(a)(v), or because only a regional mark is available, the designation of one State party to a regional treaty has the effect of a wish to obtain the effect provided for in Article 11(2) available to regional marks, the fees marked by an asterisk shall be payable once even if the regional registration effect is available in more than one State party to the regional treaty.

Kind of Fee	*Amount in Swiss Francs*
1. *Application*	
1.1 International Application Fee (Rule 9.1(a)(i)): irrespective of the number of designated States and of the number of classes	400
1.2 * Standard State Designation Fee (Rule 9.2): for each designated State to which the Standard Fee System applies	[1] 30
1.3 Color Reproduction Fee (Rule 5.3(c)(i))	100
[1.4 Transliteration Fee (Rule 9.3(a))	20]
[1.5 Translation Fee (Rule 9.3(a))	20]
[1.6 Classification Fee (Rule 9.3(a))	50]
[1.7 Indication of Trade or Business Fee (where the indication exceeds 20 words; (Rule 9.3(b))	50]
2. *Later Designation*	
2.1 International Later Designation Fee (Rule 13.1(a)(i)): irrespective of the number of designated States and of the number of classes	100
2.2 * Standard Later Designation Fee (Rule 13.2): for each designated State to which the Standard Fee System applies	[1] 30
3. *Changes in Ownership*	
3.1 Request for Recording Change in Ownership Fee (Rule 21.1(c)?)	100
4. *Limitation of List of Goods and/or Services*	
4.1 Request for Recording of Limitation of the List of Goods and/or Services Fee (Rule 22.1(c))	100
5. *Renewal*	
5.1 International Renewal Fee (Rule 23.3(a)(i)): irrespective of the number of designated States and of the number of classes	400
5.2 Renewal Surcharge (Rule 23.3(a)(i)): irrespective of the number of designated States and of the number of classes	200
5.3 * Standard State Renewal Fee (Rule 23.4): for each designated State in which the Standard Fee System applies	[1] 30

[1] Multiplied by the number of classes.

PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(c) of the "Rules of Practice of the United States Patent Office in Patent Cases." Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before October 31, 1972.

Carter, David M., 1900 S. Eads St., #327, Arlington, Va. 22202.

Gaither, Richard A., 9060 Palisade Ave., North Bergen, N.J. 07047.

Hoffman, Gary M., 5436 Calstock Court, Burke, Va. 22015.

Matteson, Frederick L., 5918 Chillum Gate Road, Chillum, Md. 20782.

Wong, David W., 68 N. Hills Terrace, Don Mills, Ontario, Canada.

LUTRELLE F. PARKER,

August 18, 1972. *Chairman, Committee on Enrollment.*

Certificates of Correction for the Week of Sept. 19, 1972

P.P. 3,131	3,626,848	3,646,424	3,656,890
D. 223,411	3,627,636	3,646,762	3,656,912
3,152,544	3,627,760	3,646,846	3,657,113
3,266,093	3,627,777	3,647,433	3,657,170
3,384,874	3,630,568	3,647,878	3,657,201
3,451,944	3,631,047	3,648,485	3,657,373
3,457,089	3,631,709	3,648,554	3,657,571
3,492,253	3,632,483	3,648,770	3,657,583
3,530,340	3,632,536	3,648,894	3,657,980
3,543,908	3,632,688	3,649,440	3,657,997
3,553,254	3,634,742	3,649,523	3,658,056
3,559,815	3,635,555	3,649,766	3,658,384
3,563,755	3,635,815	3,649,873	3,658,435
3,566,428	3,635,986	3,650,375	3,658,644
3,569,608	3,636,040	3,651,160	3,658,727
3,581,139	3,637,558	3,651,168	3,659,261
3,591,630	3,637,875	3,651,427	3,660,131
3,592,162	3,638,519	3,651,462	3,660,138
3,593,379	3,638,724	3,651,960	3,660,351
3,595,356	3,638,732	3,652,380	3,660,457
3,596,832	3,638,781	3,652,544	3,660,529
3,602,783	3,639,383	3,652,737	3,660,648
3,604,746	3,640,825	3,652,929	3,661,045
3,605,519	3,641,019	3,652,971	3,661,149
3,607,555	3,642,617	3,653,253	3,661,270
3,607,725	3,642,687	3,653,708	3,661,498
3,607,959	3,642,764	3,654,198	3,661,580
3,609,507	3,642,879	3,654,273	3,661,641
3,613,048	3,642,949	3,654,277	3,661,650
3,613,599	3,643,004	3,654,306	3,661,718
3,613,910	3,643,063	3,654,398	3,661,802
3,617,275	3,643,327	3,655,255	3,661,819
3,617,278	3,643,436	3,655,317	3,662,142
3,617,506	3,643,863	3,655,349	3,662,202
3,620,453	3,644,085	3,655,669	3,662,366
3,622,573	3,644,139	3,655,720	3,662,960
3,622,626	3,644,316	3,655,730	3,663,109
3,622,848	3,644,338	3,655,873	3,663,247
3,622,927	3,644,569	3,655,920	3,665,129
3,623,002	3,644,574	3,655,968	3,666,360
3,624,634	3,645,332	3,656,282	3,670,346
3,626,198	3,645,809	3,656,844	3,670,368
3,626,483	3,645,891	3,656,880	

Disclaimers

3,284,680.—*Finis E. Gentry,* and *Bernard R. Tuft,* Skaneateles, N.Y. SEMICONDUCTOR SWITCH. Patent Dated Nov. 8, 1966. Disclaimer filed Aug. 15, 1972, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,353,724.—*Mack S. Johnston,* Rolling Hills, Calif. BEER TAPPING DEVICE. Patent dated Nov. 21, 1967. Disclaimer filed Apr. 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,435,997.—*Mack S. Johnston,* Kalispell, Mont. BEER TAPPING DEVICE. Patent dated Apr. 1, 1969. Disclaimer filed April 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,452,125.—*Peter T. Schurman,* Snyder, and *Raymond C. Confer,* Gasport, N.Y. METHOD OF AND APPARATUS FOR BLOW MOLDING THERMOPLASTIC MATERIAL. Patent dated June 24, 1969. Disclaimer filed June 14, 1972, by the assignee, *W. R. Grace & Co.*

Hereby disclaims the portion of the term of the patent subsequent to May 9, 1984.

3,497,114.—*Mack S. Johnston,* Rolling Hills, Calif. BEER TAPPING DEVICE. Patent dated Feb. 24, 1970. Disclaimer filed Apr. 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,612,413.—*James H. Perry,* Worcester, Mass. ANGLE GRINDING PULP GRINDER. Patent dated Oct. 12, 1971. Disclaimer filed May 24, 1972, by the assignee, *Norton Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,614,381.—*Samuel J. Popeil,* Chicago, Ill. HAIR SETTING DEVICE. Patent dated Oct. 19, 1971. Disclaimer filed Aug. 6, 1972, by the assignee, *Popeil Brothers, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 3, 1987.

3,625,880.—*Glen P. Hamner,* Baton Rouge, and *Ralph B. Mason,* Denham Springs, La. CATALYSTS FOR THE SELECTIVE CONVERSION OF STRAIGHT-CHAIN HYDROCARBONS. Patent dated Dec. 7, 1971. Disclaimer filed June 11, 1971, by the inventors; the assignee, *Esso Research and Engineering Company,* assenting.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 20, 1988.

3,627,725.—*Jack C. Gilles,* Shaker Heights, Ohio. BIS (3,5-DIALKYL-4-HYDROXYBENZYL) MALONIC ESTERS FOR STABILIZING POLYMERS. Patent dated Dec. 14, 1971. Disclaimer filed Feb. 3, 1972, by the assignee, *The B. F. Goodrich Company.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,629,284.—*Hisao Yamamoto,* Nishinomiya-shi, and *Masaru Nakao,* Osaka, Japan. PROCESS FOR THE PREPARATION OF 3-INDOLYL ALIPHATIC ACID DERIVATIVES. Patent dated Dec. 21, 1971. Disclaimer filed Jan. 25, 1971, by the assignee, *Sumitomo Chemical Company, Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 16, 1988.

Dedications

3,542,621.—*Clinton W. Calhoun, Jr.,* Henrico County, and *Frank B. Hart, Jr.,* Richmond, Va., and *Lloyd C. Eberhard, Jr.,* Louisville, Ky. METHOD AND APPARATUS FOR CONTINUOUSLY LAMINATING A SHEET OF MATERIAL TO EACH SIDE OF ANOTHER SHEET OF MATERIAL. Patent dated Nov. 24, 1970. Dedication filed May 26, 1972, by the assignee, *Reynolds Metals Company.*

Hereby dedicates to the Public the entire above-identified patent.

3,568,626.—*Hamilton Southworth, Jr.,* New York, N.Y. IDENTIFYING MEANS FOR BURIED UTILITIES. Patent dated Mar. 9, 1971. Dedication filed July 7, 1972, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,660,466.—*Jack Bernstein,* and *Kathryn Alice Losee,* New Brunswick, N.J. 2,4,6-TRIIODOBENZOIC ACID DERIVATIVES. Patent dated May 2, 1972. Disclaimer and dedication filed June 29, 1972, by the inventors; the assignee, *E. R. Squibb & Sons, Inc.,* assenting.

Hereby disclaims and dedicates to the Public claims 1, 3 and 5 of said patent.

Patent Numbers For Which No Patents Exist

Issue of September 19, 1972

3,691,566	3,691,927	3,692,284	3,692,802
3,691,571	3,691,951	3,692,289	3,692,804
3,691,589	3,691,958	3,692,297	3,692,806
3,691,598	3,691,973	3,692,308	3,692,807
3,691,602	3,691,975	3,692,313	3,692,808
3,691,603	3,691,979	3,692,333	3,692,817
3,691,615	3,691,989	3,692,339	3,692,855
3,691,637	3,692,000	3,692,344	3,692,856
3,691,638	3,692,008	3,692,352	3,692,857
3,691,653	3,692,019	3,692,360	3,692,866
3,691,657	3,692,021	3,692,400	3,692,868
3,691,678	3,692,033	3,692,411	3,692,869
3,691,682	3,692,061	3,692,424	3,692,873
3,691,693	3,692,067	3,692,452	3,692,886
3,691,706	3,692,076	3,692,455	3,692,891
3,691,719	3,692,079	3,692,482	3,692,903
3,691,722	3,692,101	3,692,484	3,692,905
3,691,734	3,692,102	3,692,489	3,692,930
3,691,738	3,692,112	3,692,528	3,692,937
3,691,739	3,692,115	3,692,547	3,692,955
3,691,745	3,692,131	3,692,563	3,692,957
3,691,746	3,692,133	3,692,627	3,692,960
3,691,763	3,692,136	3,692,656	3,692,963
3,691,777	3,692,154	3,692,657	3,692,978
3,691,778	3,692,158	3,692,664	3,692,984
3,691,780	3,692,159	3,692,672	3,693,010
3,691,789	3,692,162	3,692,703	3,693,014
3,691,798	3,692,164	3,692,709	3,693,039
3,691,800	3,692,166	3,692,716	3,693,041
3,691,802	3,692,172	3,692,739	3,693,049
3,691,803	3,692,177	3,692,751	3,693,051
3,691,814	3,692,187	3,692,755	3,693,065
3,691,827	3,692,193	3,692,758	3,693,141
3,691,836	3,692,196	3,692,761	3,693,157
3,691,837	3,692,209	3,692,762	3,693,164
3,691,849	3,692,229	3,692,764	3,693,175
3,691,851	3,692,234	3,692,765	3,693,186
3,691,856	3,692,248	3,692,782	3,693,187
3,691,912	3,692,261	3,692,785	
3,691,919	3,692,279	3,692,786	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-02-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-02-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-29-71
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-08-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-14-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-23-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-09-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-03-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-23-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive
Plant Patents..... Numbers 1,417 to 1,422, inclusive

REISSUES

SEPTEMBER 19, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,477

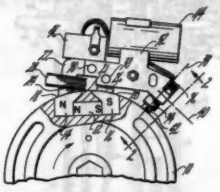
BREAKERLESS IGNITION SYSTEM WITH AUTOMATIC SPARK ADVANCE USING TRIGGERING COIL

Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Original No. 3,447,521, dated June 3, 1969, Ser. No. 648,023, June 22, 1967. Application for reissue Nov. 27, 1970, Ser. No. 93,518

Int. Cl. F02p *1/08*

U.S. Cl. 123—148 E 9 Claims



An ignition system for use with an engine having a spark gap ignition device includes a first triggering coil having its axis arranged generally tangentially to the circular path of a magnet assembly fixed to a rotor rotated in synchronism with the operation of the engine. A ramp voltage is induced in the first coil and triggers an associated switching device to cause a spark when the induced voltage reaches a given triggering voltage, the steepness of the ramp being dependent on the rotor speed so that at different speeds the triggering voltage is reached at different rotor positions. A second triggering coil connected in parallel with the first coil and having its axis arranged generally radially of the circular magnet path produces a triggering voltage for causing a spark at a definite rotor position during low speed operation. The magnet assembly is also used in conjunction with another coil forming part of a condenser discharge system for generating the electrical power used to produce the spark.

27,478

COMMUNICATION SYSTEM HAVING A MULTIPLE ACCESS MAN-MADE SATELLITE

Gerard Pierre Battail, Paris, and Pierre Claude Brossard, Montigny-le-Bretonneux, France, assignors to Communications Satellite Corporation

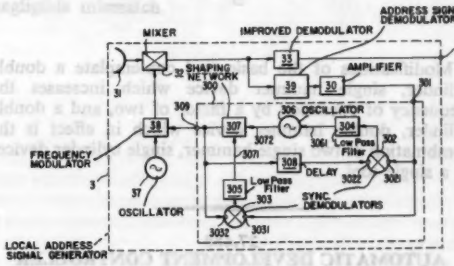
Original No. 3,470,477, dated Sept. 30, 1969, Ser. No. 658,565, Aug. 4, 1967. Application for reissue Feb. 11, 1971, Ser. No. 114,453

Claims priority, application France, Aug. 5, 1966, 72,249

Int. Cl. H04b *1/06*

U.S. Cl. 325—304 6 Claims

A communications receiver which receives F.M. communications from a plurality of transmitters but detects information only from that transmitter which modulates the carrier with an address frequency assigned to the receiver. A frequency deviation feedback loop connected between the output and input of the receiver mixer generates a local carrier frequency which differs from the received carriers by the center frequency of an improved demodulation and which is modulated by the address signal assigned to the receiver. A phase lock loop and an amplitude lock loop in the feedback path operate to control the phase and amplitude of the locally generated address signal so that the mixing of the F.M. modulated locally generated carrier and the received signals results in an intermediate frequency output which is frequency



modulated by the desired information only. All of the received carriers which have been modulated by different address signals will come out of the mixer as intermediate frequencies modulated by a combination of signals. Only the desired information signal then is capable of passing through the improved demodulator.

27,479

IMPACT TOOL

Murray L. Jayne, Kenosha, Wis.

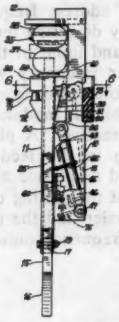
Original No. 3,565,183, dated Feb. 23, 1971, Ser. No. 783,611, Dec. 13, 1968. Application for reissue Feb. 25, 1971, Ser. No. 119,064

Int. Cl. B25d *9/04*

U.S. Cl. 173—13 14 Claims

An impact tool for loosening and breaking homogeneous material such as compacted or frozen earth, black top and concrete. The tool is adapted to be mounted on the boom of a backhoe or the like, and it is powered by the hydraulic system of the apparatus on which it is mounted or by a separate system. A tool element, such as a hardened point, is integral with or mounted on an anvil arranged for limited longitudinal movement in a housing. A hammer coacting with the anvil is energized by a spring, preferably a pneumatic spring. A hydraulic cylinder moves the hammer against the spring, and when the spring is compressed in desired amount, the piston rod of the cylinder is cammed away from the hammer, thereby permitting the spring to drive the hammer, thereby

permitting the spring to drive the hammer with great force against the anvil. The tool is arranged so that operation thereof occurs only when the tool element or point is positioned against the work and the movable anvil has an inward relation with its housing, thereby providing a "dead man" control feature. In basic form the tool has a single hammer and a single cylinder.



Modifications of the basic tool contemplate a double cylinder, single hammer device which increases the frequency of operation by a factor of two, and a double cylinder, double hammer device which in effect is the combination of two single hammer, single cylinder devices in a single tool.

27,480

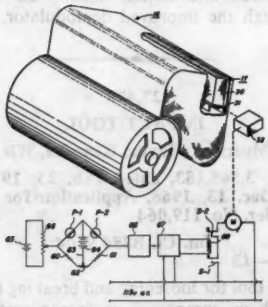
AUTOMATIC DEVELOPMENT CONTROLLER

Roman C. Kamola, North Rose, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original No. 3,376,854, dated Apr. 9, 1968, Ser. No. 554,522, June 1, 1966. Application for reissue July 3, 1969, Ser. No. 846,986

Int. Cl. G03g *15/08*

U.S. Cl. 118—7 **3 Claims**



A toner concentration control system for a recording apparatus in which a sensor comprising two parallel spaced NESA glass plates through which developer material flows serves to generate signals to automatically control toner dispensing. The lower plate has a pattern which is held at a potential to attract toner. A light source and photocell on either side of the plate senses the toner deposit per unit of time in accordance with toner concentration. Another photocell is arranged as a leg of a bridge circuit which includes the first photocell such that when the latter senses a toner situation away from the desired density effect, an unbalance of the bridge occurs causing toner dispensing.

27,481

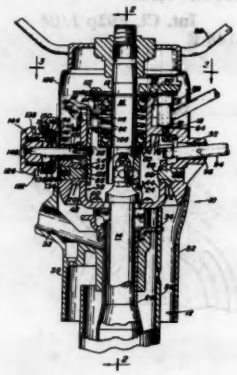
ADJUSTABLE STEERING MECHANISM EMPLOYING MEMORY UNIT

Thomas S. Reed, Glen Ellyn, and Edward S. Stanuch, Jr., Crestwood, Ill., assignors to Borg-Warner Corporation

Original No. 3,365,976, dated Jan. 30, 1968, Ser. No. 509,772, Nov. 26, 1965. Application for Reissue Nov. 2, 1970, Ser. No. 86,392

Int. Cl. B62d *1/18*

U.S. Cl. 74—493 **16 Claims**



A vehicle steering column angularly adjustable to a number of pre-selectable positions including a locking device for retaining the column in the selected position and a memory device by which an operator can select a preferred position and whereby the memory device will enable the operator to return the steering column to the preferred position even though the column has been moved to other positions.

27,482

HYDRAULIC BOWL RELEASE FOR CONE CRUSHERS

Loren G. Symons, North Hollywood, Calif., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

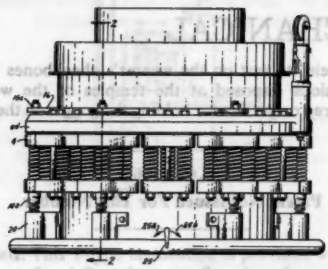
Original No. 3,162,387, dated Dec. 22, 1964, Ser. No. 151,708, Nov. 13, 1961, which is a division of Ser. No. 690,458, Oct. 16, 1957, now Patent No. 3,019,994, dated Feb. 6, 1962. Application for reissue Mar. 3, 1971, Ser. No. 120,783

Int. Cl. B02c *7/14*

U.S. Cl. 241—290 **17 Claims**

1. In a gyratory crusher, a circumferential main frame with an outwardly extending flange adjacent its upper edge, a bowl supporting ring tiltably mounted on said flange and movable upwardly therefrom, a bowl mounted on the bowl supporting ring, yielding means for normally holding the bowl supporting ring downwardly against said flange and substantially fixed in relation to the main frame while permitting overload release, including a plurality of bowl holding and release springs, their upper ends abutting the lower side of said main frame flange, movable abutments for the lower ends of the springs, and spring bolts passing through apertures in said main frame flange, and connecting said abutments and bowl supporting ring with said springs under compression there-

between, thrust members extending upwardly among the springs through the main frame flange with a surface opposing the bowl supporting ring, and a plurality of hydraulic jacks positioned about the main frame relative



to the thrust members so that when the jacks are energized, they apply an upthrust to the thrust members which will be communicated to the bowl supporting ring, thereby raising the bowl to allow the free escape of lodged material.

27,483

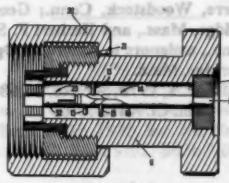
PRECISION MINIATURE SEXLESS COAXIAL CONNECTOR

Harmon W. Banning, Winchester, Mass., assignor to Andrew Alford, Winchester, Mass.

Original No. 3,533,046, dated Oct. 6, 1970, Ser. No. 783,941, Dec. 16, 1968. Application for reissue May 26, 1971, Ser. No. 147,066

Int. Cl. H01r *17/04, 25/00*

U.S. Cl. 339—48 6 Claims



A miniature sexless coaxial connector is characterized by an inner conductor sliding spring mechanism to establish coupling between like connectors while introducing negligible mismatch.

PATENTS

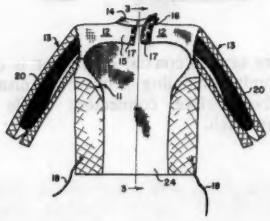
GRANTED SEPTEMBER 19, 1972

GENERAL AND MECHANICAL

3,691,564
PROTECTIVE GARMENT

David A. La Marre, Woodstock, Conn.; George H. Schauweker, Southbridge, Mass., and Herbert F. Stickney, North Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 4, 1970, Ser. No. 86,680
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 10 Claims

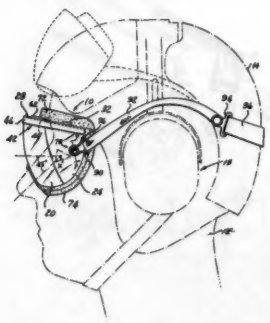


A welder's jacket including a light colored main body portion having a flexible, detachable, highly reflective facing over substantially the entire front portion and forward exposed arm portions, and having a moisture absorptive thermally insulating body contacting portion.

3,691,565
FLIGHT DECK GOGGLE

Edward A. Galonek, Southbridge, Mass., assignor to Omnitech Inc., Southbridge, Mass.

Filed Nov. 25, 1970, Ser. No. 92,680
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 H 12 Claims



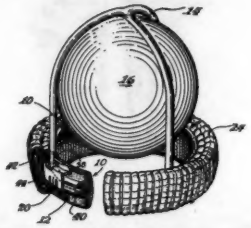
An improved flight deck goggle which accommodates vision-correcting spectacles or eyeglasses and which may be used with a helmet provided with sound-attenuating earcups is made up of a spherical pantoscopic lens section which is molded from clear impact-resistant synthetic resin with rearward extensions at the sides thereof, thus providing an upper lens section edge which is detachably received in a frame which abuts the wearer's forehead to space the upper edge of the lens section from the forehead to tilt the section downwardly to permit the lower edge, having a nose bridge recess therein, to rest on the wearer's cheekbones with the side extensions disposed at the temples of the wearer to receive a strap or the like for holding the goggle on the head.

3,691,566
Patent Not Issued For This Number

3,691,567
PROSTHETIC HEART VALVE HAVING A PAIR OF SUPPORT RINGS OF DISSIMILAR MATERIAL

Harry W. Cromie, Pittsburgh, Pa., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed May 7, 1971, Ser. No. 147,275
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 9 Claims



A prosthetic heart valve having an inner support ring of rigid non-thrombogenic material and a malleable metallic outer support ring positioned about the periphery of the inner ring and bent into the immovable clamping relationship therewith. A portion of a tubular fabric member is retained between the two clamped rings, and the remainder of the fabric member is folded into a plurality of layers about the periphery of the outer ring to form a suturing site. Typically, the outer ring carries an outwardly extending flange on one side, which is overlaid by a single thickness of the tubular fabric, to hold the multiple layer suturing site away from the orifice of the inner ring.

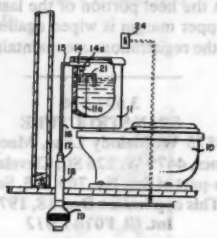
3,691,568
VENTILATOR FOR WATER CLOSETS

William L. Martz, 15875 Woodacre Road, Los Gatos, Calif.

Continuation-in-part of Ser. No. 882,815, Dec. 8, 1969, Pat. No. 3,626,554. This application Aug. 24, 1970, Ser. No. 66,346
Int. Cl. E03d *9/04*, *9/05*
U.S. Cl. 4—213 3 Claims

A ventilator attachment for bathrooms and the like which is adapted for use with the ventilator disclosed in application Ser. No. 882,815 so that the ventilator disclosed in said application may be employed with water tanks in which, for example, the overflow channel or pipe is integral with a wall of the tank. This attachment employs a tube having one end fitting into the inlet of the ventilator hood and the other end fitting into the overflow pipe of the tank. An elbow pipe having one end attached to the tube and having the other end positioned below the water line of the tank is provided to drain any excess water into the overflow pipe. Another embodiment of this

device employs a T-type coupling for connecting the ventilator pipe to the water pipe leading to the toilet bowl in flush-

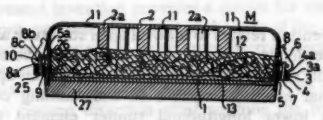


type toilets. This T-type connection is provided with a baffle inside thereof to deflect the water flow therethrough and keep it from flowing into the ventilator pipe.

3,691,569
CUSHION

Takeo Ikada, 248, Sannotani, Hanmoku, Naka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Dec. 22, 1969, Ser. No. 887,057
Claims priority, application Japan, Dec. 28, 1968, 43/96025
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 **9 Claims**

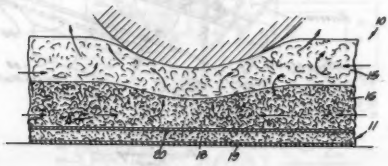


A cushion having a body comprising a layer composition formed of a mixture of rigid elastic fibrous materials and an elastomeric foam, said mixture being such that said rigid elastic fibrous material in part surround part of said foam, while part of said foam surrounds part of the fibers, thus said fibers and said foam occupying a defined space in mutually complementary relationship, said foam including a foam layer formed in integral connection with and extending outside the foam part surrounded by said rigid elastic fibrous materials.

3,691,570
BED PAD AND METHOD OF USE TO SUPPORT AN INVALID

Erwin B. Gaines, 12613 Crewe St., North Hollywood, Calif., and Hyman S. Baigel, 6258 Shirley Ave., Reseda, Calif.

Filed Feb. 9, 1970, Ser. No. 9,622
Int. Cl. A47c *27/12*
U.S. Cl. 5—347 **3 Claims**



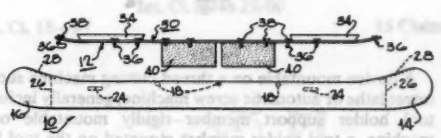
An inexpensive throw-away, soft, resilient, ventilated sanitary pad formed of polyester fibers bonded together for use beneath a patient having impaired circulation and a method of utilizing the same alone or in combination with a moisture collecting pad to protect bed clothing and to aid the patient's comfort. The patient-contacting pad is treated with fungicidal and bactericidal material withstanding a limited number of cleansing cycles readily carried out near bedside for immediate return of the pad to the same patient. The pad may be used in combination with a moisture collecting pad without interfering with the ventilating function of the former.

3,691,571
Patent Not Issued For This Number

3,691,572
CANOE CONSTRUCTION

Peter A. Yannes, Jr., 430 Manor Road, Beverly, N.J.

Filed Oct. 15, 1970, Ser. No. 80,969
Int. Cl. B63c *9/02*; B63b *7/02*
U.S. Cl. 9—3 **9 Claims**

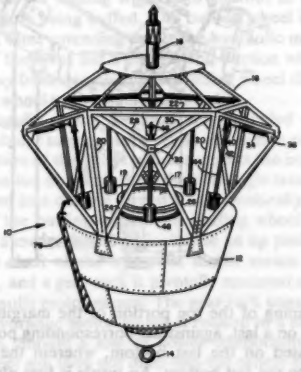


An open canoe is adapted for use in white water by means of a removable top deck which is attached to the gunwales of the canoe and generally covers the open top except for cockpit openings for the paddlers. Suspended from the under side of the top deck are one or more buoyant chambers which fill one-third or more of the open space in the canoe hull. The deck member tends to limit the flow of white water into the hull, and the buoyant chamber limits the available space in the hull for the accumulation of water, so that the amount of water taken in by the canoe is limited, which enables more effective use of the boat.

3,691,573
SELF-POWERED SIGNAL BUOY

Gaetano J. Laudato, Jr., 2 Lamartine Place, Jamaica Plain, Mass.

Filed July 20, 1970, Ser. No. 56,348
Int. Cl. B63b *51/00*
U.S. Cl. 9—8.3 E **6 Claims**



A signal buoy is provided with one or more pendulums operating an air compression system in which the pendulums swing with the motion of the buoy. Compressed air is stored in a charging tank until it reaches a preset pressure at which point it is released to drive an air turbine which in turn

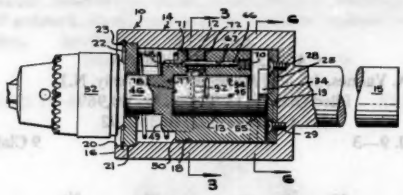
operates an electrical generator and through a voltage regulator charges batteries on the buoy. The battery, in turn, operates a signal lamp or other accessory equipment.

3,691,574

TOOL HOLDING DEVICE

James F. Lee, Route 4 Box 119, Darlington, S.C.

Filed May 3, 1971, Ser. No. 139,445
Int. Cl. B23g 1/02, 1/46, 3/00, 5/08
U.S. Cl. 10—89 H 26 Claims



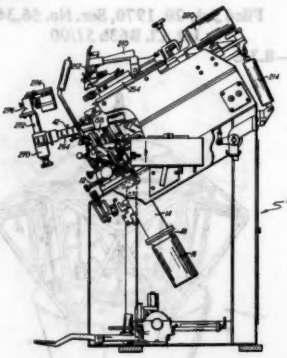
A device mountable on a thread cutting machine such as a turret lathe or automatic screw machine, generally including a tool holder support member rigidly mountable on the machine, a tool holder member mounted on the tool holder support member for rotatable and axial movement relative thereto, and means disposed on the tool holder member for mounting thereon a thread forming tool such as a tap or die cutting tool. The device is provided with means for accommodating either a right hand or left hand thread forming tool without having to reset the device each time it is desired to change the type of thread being cut.

3,691,575

TOE WIPING WITH INSOLE UNSECURED TO LAST BOTTOM

Walter Vornberger, Tewksbury, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.

Filed Feb. 12, 1971, Ser. No. 114,931
Int. Cl. A43d 21/00
U.S. Cl. 12—145 12 Claims



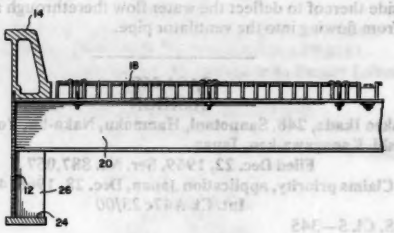
The wiping of the toe portion of the margin of an upper, mounted on a last, against the corresponding portion of an insole located on the last bottom, wherein the insole is unsecured to the last bottom. An insole is first placed on insole rests and then the last bottom is placed on the insole with the toe portions of the insole and last bottom bearing against abutments to retain them in registration. A suction cup, engaged with the heel portion of the insole, constrains the insole against movement on the insole rests during the placement of the last bottom on the insole. A pulling over mechanism pulls the upper about the last in a heel to toe direction to cause the heel portion of the upper margin, that is extending downwardly of the last, to form a cup about the heel portion of the last bottom which retains the heel portion of the insole in registration with the heel portion of the last bottom. The toe portion of the upper margin is wiped against and attached to the insole while the registrations are maintained.

3,691,576

SPAN STRUCTURE

Ray P. Miles, 8575 W. Melody Lane, Macedonia, Ohio, and Andrew F. Szucs, 4479 W. 226 St., Cleveland, Ohio

Continuation-in-part of Ser. No. 763,175, Sept. 27, 1968, Pat. No. 3,548,433. This application Dec. 18, 1970, Ser. No. 99,368
Int. Cl. F01d 15/12
U.S. Cl. 14—72 6 Claims



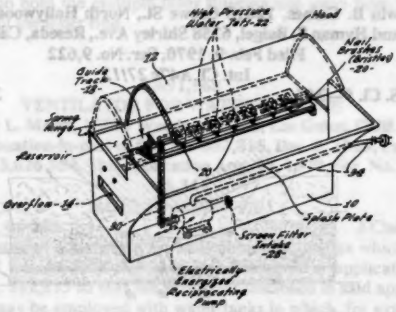
The invention relates to a novel span structure as for ramps and bridges having a series of crossbeam members secured to an assembly of side elements which comprise an upper hollow longitudinal member capable of withstanding compression forces, a lower longitudinal runner element capable of withstanding tension forces, a vertical side element between the hollow member and the lower element, and a vertical stiffener element between the crossbeam and the lower element. The structure has uniform longitudinal flex and the side elements provide a column effect.

3,691,577

WATER PRESSURE FINGERNAIL CLEANING UNIT

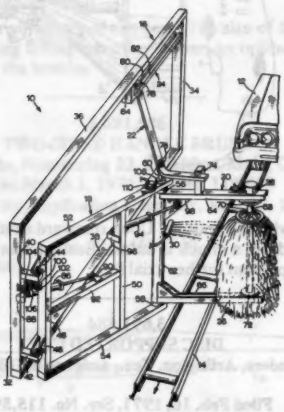
William W. Bliss, 1756 N. Fuller, Los Angeles, Calif.

Filed April 1, 1971, Ser. No. 130,318
Int. Cl. A47k 7/04
U.S. Cl. 15—21 R 4 Claims



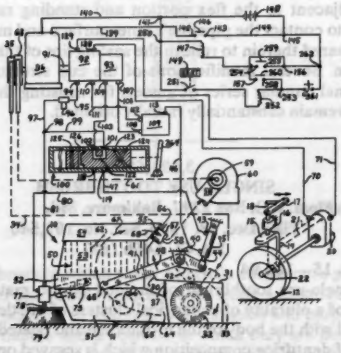
An improved water pressure fingernail cleaning unit is provided which includes a housing, and a reciprocally actuated nail brush mounted in the housing and through which high pressure water jets are directed at high pressure under the nails of the user.

3,691,578
CAR WASHING APPARATUS
Ivan Barber, 559 Evans Ave., Toronto 14, Ontario, Canada
Filed July 15, 1971, Ser. No. 163,024
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 7 Claims



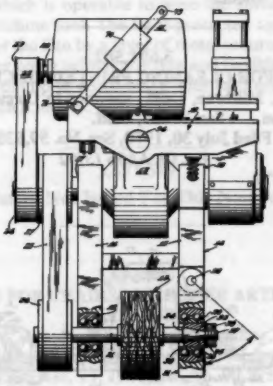
The present invention provides a device for washing a part of the front, one side and a part of the rear of the car. A brush is coupled to a system of three arms interconnected and controlled to automatically draw the brush across the front of the car when the car pushes the brush forwardly. The brush is controlled to reverse direction after washing the front number plate and to move relatively freely around car projections at the junction of the front and side of the car.

3,691,579
SURFACE MAINTENANCE MACHINE DRIVE
Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.
Filed Oct. 30, 1970, Ser. No. 85,468
Int. Cl. E01h 1/04
U.S. Cl. 15—83 13 Claims



A mobile sweeping machine having separate hydraulic motors for driving the curb brush and the propulsion wheel; a battery powered, constant speed electric motor that through mechanical drive connections drives the main sweeping brush, the suction blower and tandem pump; and a control valve for selectively applying fluid under pressure from the fixed displacement tandem pump section to the curb brush, the cylinder for elevating the debris and filter receptacle, and to either of the curb brush and cylinder. The variable displacement pump section of the tandem pump supplies fluid under pressure to the propulsion wheel hydraulic motor. A filter is located in the return line ahead of the variable volume pump section.

3,691,580
BUFFING HEAD
Glenn J. Eggert, Cedarburg, Wis., assignor to Houdaille Industries Inc., Buffalo, N.Y.
Filed Nov. 5, 1970, Ser. No. 87,049
Int. Cl. B24b 29/00
U.S. Cl. 15—97 15 Claims



A buffing apparatus having a buffing wheel driven by an electric loader and positioned by a hydraulic motor means which moves the buffing wheel into and out of engagement with the article being buffed. The buffing wheel is supported by a pair of arms extending below the hydraulic motor means, and one of the arms has a pivotal end portion which may be rotated away from one end of the buffing wheel shaft to allow the buffing wheel to be readily removed.

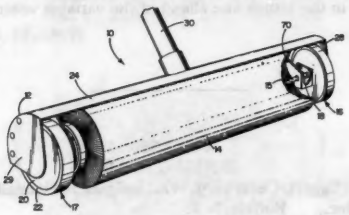
The hydraulic motor means is also provided with a volt-angle transducer to generate a signal which is in proportion to the orientation of the frame which supports the buffing wheel. The information obtained from the volt-angle transducer may be then used in a control circuit to automatically control the position of the buffing wheel. The buffing wheel is also provided with a means for being locked in an up position. In this regard, the shaft of the hydraulic motor means is provided with a gear, and a gear rack is pivotally mounted on the frame of the hydraulic motor means. The gear rack engages the gear when the hydraulic motor means is rotated to a desired angular position. Should a loss of power temporarily occur, the buffing wheel will then not drop into the article being buffed. The entire apparatus including the electric motor and the hydraulic rotary motor and the buffing wheel is supported in a U-shaped bracket which in turn is mounted on a horizontal track by means of a series of rollers mounted externally of the U-shaped bracket. The entire apparatus is supported by a pivotal connection within the U of the bracket.

3,691,581

FRICTION-DRIVEN ROTARY CLEANING APPARATUS WITH COAXIAL TRANSMISSION

John H. Coult, One Leland Road, Natick, Mass.

Filed April 19, 1971, Ser. No. 135,142
Int. Cl. A47l *11/22*
U.S. Cl. 15—49 C 10 Claims



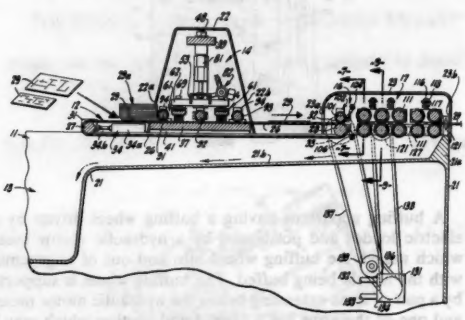
This disclosure depicts floor and ground cleaning apparatus having a cylindrical brush which is friction driven from a pair of wheels through novel transmission means coaxial with the brush and the wheels.

3,691,582

MACHINE FOR CLEANING PRINTED CIRCUIT BOARD

Sterling Call, Millbrae, Calif., assignor to Circuit Equipment Corporation, San Bruno, Calif.

Filed July 30, 1970, Ser. No. 59,635
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 11 Claims



Cleaning machine having a conveyor belt for transporting printed circuit beneath scrubbing brushes moving reciprocally along an orbital path. A fluid actuated ram urges the brushes against the boards with a pressure which remains constant regardless of variations in board thickness and brush wear. A sink is provided at one end of the belt, and rinsing and drying stations are provided at the other.

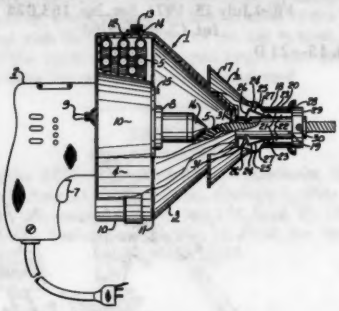
3,691,583

SEWER AUGERING MACHINE

Lee H. Silverman; Arthur A. Silverman, and Edward T. Gaworski, all of Pittsburgh, Pa., assignors to General Wire Spring Company, Pittsburgh, Pa.

Filed Jan. 6, 1971, Ser. No. 104,242
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 SN 10 Claims

A plumber snake apparatus for cleaning pipes with a plumber snake wherein a changeable snake cartridge with a snake coiled therein is removeably housed in a cartridge housing. A handgrip is provided at the forward end of the housing for gripping the tool as the snake within the pipe being cleaned



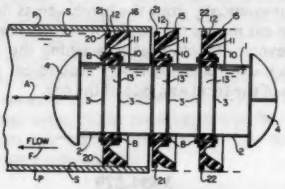
is rotated with the housing. Upon rearward axial displacement of the handgrip a chuck is automatically actuated to grip the snake and prevent further axial feed.

3,691,584

DISC SUPPORTED CUP

Don B. Landers, Arlington, Tex., assignor to Oil States Rubber Co.

Filed Feb. 16, 1971, Ser. No. 115,590
Int. Cl. B08b *9/06*
U.S. Cl. 15—104.06 R 8 Claims



An elastomeric cup structure of the type wherein several cups are mounted on a supporting body or mandrel to form a pig to be passed through a pipeline, usually entrained in fluid flowing therethrough, either for the purpose of batch separation or for cleaning the pipeline. Each cup has a sealing lip supported by an annular flex portion attached to a cup base, and the cup further including a disc portion attached to the base adjacent to the flex portion and standing radially outwardly to contact the pipeline's inner surface and maintain the pig centered therein to relieve the sealing lips of this centering function. Several modifications of the cup structure include additional annular series of gussets for assisting the disc portion to remain substantially radially oriented.

3,691,585

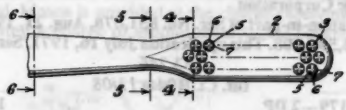
SINGLE-USE TOOTHBRUSH

Charles Flom, P.O. Box 2297, Baltimore, Md.

Filed Dec. 28, 1970, Ser. No. 101,540
Int. Cl. A46b *1/00*
U.S. Cl. 15—104.94 2 Claims

A single-use toothbrush of molded plastic material, composed of a plurality of cylindrical clusters of bristles integrally molded with the body of the toothbrush and coated with a thin layer of dentifrice composition which is sprayed onto the bristles in an amount adequate for a single brushing only. Each cluster is composed of four bristles of approximately triangular section and is formed by bristles projecting from a cylindrical base of small depth which is bisected by a pair of rectangu-

larly displaced diametral slots which define the inner surfaces of the bristles while the lateral surfaces of the latter are coincident with the periphery of the base. The size of the clusters and their spacing from each other impart an optimum degree of flexibility to the bristles.



3,691,586

TWO-SIDED HANDLE BRUSH

Kurt R. Krusche, Nansenring 22, Frankfurt/Main, Germany

Filed March 1, 1971, Ser. No. 119,505

Claims priority, application Germany, Feb. 27, 1970, G 70 07 182.8

Int. Cl. A46b *3/10*

U.S. Cl. 15—106 **10 Claims**

Two-sided handle brush having a frame in which there are mounted in opposed relationship two brushing bodies each including a base plate on which a bendable brushing means is mounted. The brushing means may, for example, have the bristles thereof disposed at an acute angle with respect to the general plane of the base plate of the brushing means, whereby the brushing means serves as an efficient cleaning device.

3,691,587

TOOTHBRUSH

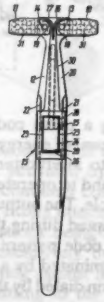
Herbert Makowsky, Wielandstr. 25, 28 Bremen, Germany

Filed Jan. 22, 1971, Ser. No. 108,942

Claims priority, application Germany, Jan. 23, 1970, P 20 02 984.9

Int. Cl. A46b *15/00, 9/10*

U.S. Cl. 15—167 R **7 Claims**



A toothbrush in which a pair of bristle carriers are pivotally mounted to one handle adjacent each other and are rotatable between a position in which they are aligned and perpendicular to one handle and a position in which they are parallel to each other and to the handle. Movement is imparted through a latchable slide on one handle which is connected to the carriers by tapered, deformable arms integrally molded with one carrier and slides in a single injection operation.

3,691,588

STRIPPER DEVICE

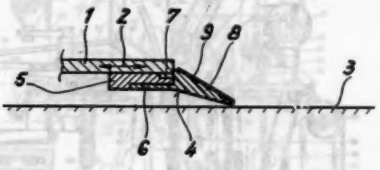
Arnold Hennig, Erlenstrasse 10, Ismaning 8045, and Kurt Hennig, Georgensteinstrasse 16, 8000 Munich 71, both of Germany

Filed Jan. 28, 1971, Ser. No. 110,715

Claims priority, application Germany, Feb. 3, 1970, P 20 04 741.0

Int. Cl. F16c *17/00*

U.S. Cl. 15—256.5 **10 Claims**



A stripper device for attachment to a movable part of a machine tool comprises a strip of resilient material secured to the movable machine part and terminating in a deflectable, exposed lip which is operable to wipe the surface of a fixed part of the machine tool. The lip is protected against damage by hot chips or the like by a layer of metal secured to the strip, the metal layer being sufficiently thin and flexible as to permit deflection of the lip in accordance with variations of the surface over which it moves.

3,691,589

Patent Not Issued For This Number

3,691,590

CASTORS FOR CHAIRS AND OTHER ARTICLES OF FURNITURE

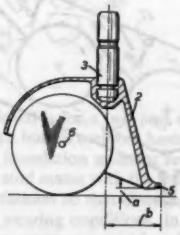
Fritz Drabert, Minden/Westphalia, Germany, assignor to Drabert Sohne, Minden/Westphalia, Germany

Filed Nov. 17, 1970, Ser. No. 90,275

Claims priority, application Germany, June 18, 1970, P 20 29 902.9

Int. Cl. B60b *33/00*

U.S. Cl. 16—18 **1 Claim**



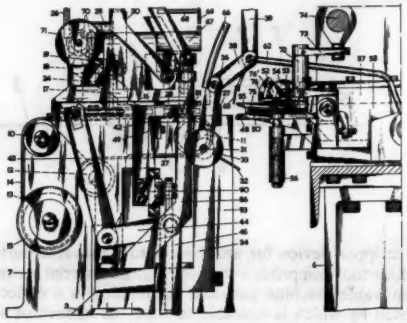
A castor for a chair comprises a wheel rotatably mounted in a housing which is pivotal about a substantially vertical axis spaced from the axis of the wheel. The housing includes an abutment surface arranged on the other side of the vertical axis to the axis of the wheel and extending below the axis of the wheel. When the chair is tilted, the abutment surface contacts the floor to prevent the chair from overturning.

3,691,591

APPARATUS FOR SHELLING SHRIMPS

Hendrikus Gerhardus Muller, 1169 Gronausestraat, Hengelo, Netherlands

Division of Ser. No. 807,349, March 14, 1969, Pat. No. 3,600,744. This application April 13, 1971, Ser. No. 133,594
Claims priority, application Netherlands, March 14, 1968, 6803635
Int. Cl. A22c 29/00
U.S. Cl. 17—73 26 Claims



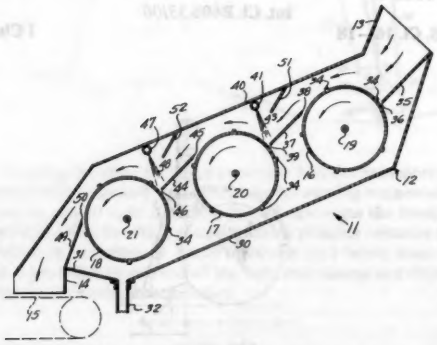
Cooked shrimps which are accordingly curved are shelled by accurately orienting them and transferring them to a shelling station where the body portion of the shell is gripped and the tail is straightened out and the shrimp is beheaded. The body and tail portions of the shell are then separated and the shrimp is pushed part way out of the gripped body portion of the shell. The tail portion of the shell is then stripped off and the shrimp is then pushed all the way out of the body portion of the shell.

3,691,592

SHRIMP DEHEADER

Hubert Ward, 1412 Choctan Ave., Metairie, La.

Filed May 7, 1971, Ser. No. 141,295
Int. Cl. A22c 29/00
U.S. Cl. 17—71 10 Claims



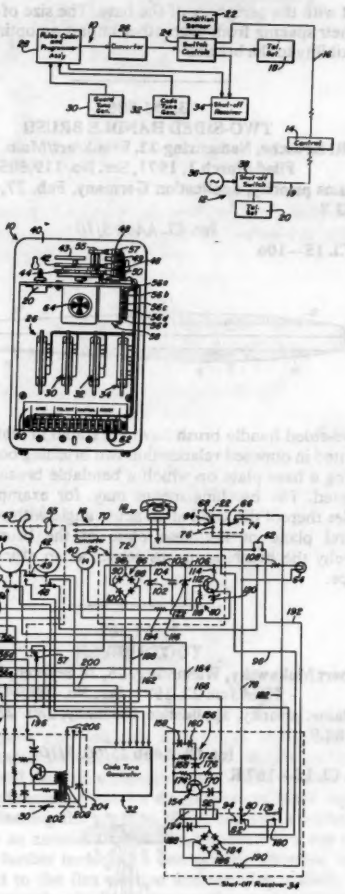
A shrimp deheader consisting of an inclined housing having a top shrimp inlet chute and a bottom deheaded shrimp outlet chute, with a series of coupled driven cylindrical drums journaled therebetween, the drums having spaced bars on their peripheral surfaces. Stationary inclined baffles are located between the drums, and water jet nozzles are mounted above and directed toward the gaps between the lower edges of the baffles and the drums adjacent thereto, the jets from the nozzles aiding the heads of shrimp moving toward the drums to become loosened and detached.

3,691,593

DATA DIALING TRANSMITTER

Roger C. Glidden, Wenham, Mass., assignor to The Glidden Electric Corporation

Continuation-in-part of Ser. No. 851,878, Aug. 21, 1969, Pat. No. 3,594,508. This application July 16, 1971, Ser. No. 163,246
Int. Cl. H04m 11/08
U.S. Cl. 179—2 DP 11 Claims



A transmitter having a pulse coder and programmer assembly controls withdrawal of energy from the telephone lines at a reporting station to intermittently unload the lines for pulse dialing purposes and to operate a pair of oscillators during each operational cycle. The output of one of the oscillators is intermittently interrupted during the message period in accordance with a pulse code pattern. Recycling of the transmitter is selectively terminated by a return signal originating from the receiving station dialed by the transmitter.

3,691,594

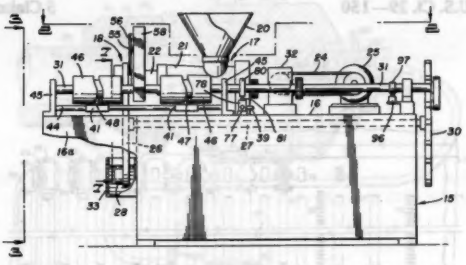
MEAT BALL FORMING MACHINE

Harold L. Klein, 4240 Marland Drive, Columbus, Ohio

Filed June 12, 1970, Ser. No. 45,858
Int. Cl. A22c 7/00
U.S. Cl. 17—32 7 Claims

A meat ball forming machine comprising a rotatable transfer plate which supports a plurality of open-ended

transfer tubes. This plate is indexed successively to move the transfer tubes from a charge-receiving station to a charge-forming station where the formed meatball is also released or discharged. Means is provided at the charge-receiving station for supplying a charge of ground meat to the socket of one



tube, a pair of forming cups is provided at the forming station for moving into the tube and engaging and forming the charge, and means is provided at the discharge station for moving the cups out of the transfer tube and separating the forming cups to release the formed meat ball.

3,691,595

LASHING FITTING

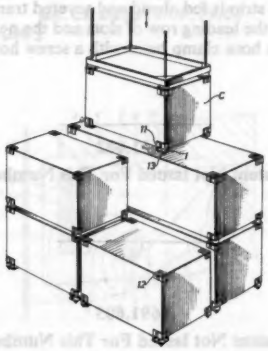
Hans Ulrich Backteman, Bromma, and Richard John Taylor, Johanneshov, both of Sweden, assignors to AB Backtemans Patenter

Filed March 4, 1971, Ser. No. 120,839

Claims priority, application Sweden, March 6, 1970, 3051/70; Feb. 9, 1971, 1608/71

Int. Cl. B61d *45/00*; B65j *1/22*

U.S. Cl. 24—81 E **14 Claims**



Lashing fittings are characterized in that the rotation of the twistlock is automatically activated by vertical compression caused by the weight of a container coming into contact with the housing of the lashing fitting attached to a container or a loading platform, said twistlock being rotated by means of a force which is released exclusively by the said act of the weight of a container reacting against the housing of the lashing fitting thereby transmitting to the twistlock a revolving movement towards a locking position within said corner casting. An indicator is provided for indicating the tripping of the lashing fitting for connecting the containers in question to the lashing fitting and thereby to one another, and, on the other hand, angular displacement in opposite directions of the arrow tip-like heads of the twistlocks of one lashing fitting in relation to each other and, further, a sub-division of the revolving movement of the lock members over an angular range of 180° into two unequal steps during turning of the twistlocks to respectively the locked and the released positions.

3,691,596

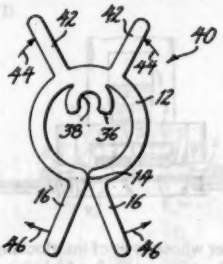
FABRIC CLIP

Judson T. Ulansey, R.D. 3, Doylestown, Pa.

Filed Jan. 13, 1971, Ser. No. 106,068

Int. Cl. A44b *13/00*; D06f *55/00*

U.S. Cl. 24—84 R **3 Claims**



A fabric clip that is particularly adapted to hang and display garments on a hanger. The fabric clip comprises a looped resilient member having an opening formed in the loop. A pair of flared legs converge at the opening, and aid in the insertion of the fabric into the loop. The loop can then be hung from a hanger by a hook formed at the top thereof. In this way, a pair of hooks can be secured on a hanger and a garment can be suspended from the looped portion of the clip.

3,691,597

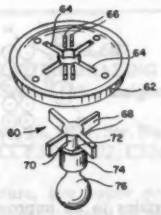
TWO-PART SNAP-ON FASTENING DEVICE

Edward J. Kahn, Baltimore, Md., assignor to Togs, Inc., Cockeysville, Md.

Continuation of Ser. No. 819,144, April 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 781,296, Oct. 16, 1968, abandoned. This application July 27, 1971, Ser. No. 166,616

Int. Cl. A44b *1/38*

U.S. Cl. 24—108 **7 Claims**



The invention disclosed is for a two-part snap-on fastening device which includes a button member having a stud projecting therefrom, and a foundation member securable to a garment. The projecting stud mates with the foundation member in a semi-permanent fashion so that disengagement does not result during normal wearing conditions. In a preferred embodiment, the button portion is made of relatively hard material having a stud integral therewith, the free end of which is bulbous and adapted to be inserted into the somewhat resilient foundation member and form a semi-permanent connection therewith.

3,691,598

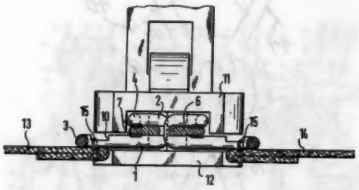
Patent Not Issued For This Number

3,691,599

SLIDE FASTENER

Dieter Maisenbacher, Stuttgart-Birkach, Germany, assignor to Dr. Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

Filed Dec. 21, 1970, Ser. No. 100,284
Int. Cl. A44b *19/10, 19/26*
U.S. Cl. 24—205.13 C 10 Claims



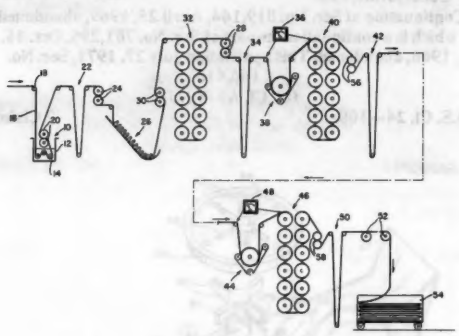
A slide fastener whose rows of interlocking plastic elements are of the folded-manner type, in which one set of leg portions is longer than the other set, and in which the precise spacing of the elements in each row is maintained by a strip of plastic extending along the row between the short and long legs of each element and fastened to the joining portions of the filament constituting the row which connects the short legs.

3,691,600

METHOD OF FINISHING OF GREIGE WOVEN FABRICS

Herman J. Joy, Latham, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,833
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 2 Claims



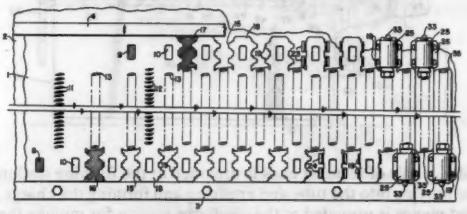
This invention pertains to an improved method and apparatus for finishing greige goods in a single processing range. The invention is applicable particularly to the finishing of high-shrinkage fabrics such as denim. The apparatus of the invention includes the following combination of devices for sequentially processing the fabric: a padder for impregnating the fabric with a desired liquid finishing preparation; a scray for collecting and storing temporarily the fabric when it is discharged from the padder; a free-rolling heated can assembly for partially drying the fabric received from the scray, and having control rollers at its input and output sides for controlling the tension of the fabric as it is advanced through the can assembly; a first compressive-preshrinkage unit for preshrinking the fabric an amount equal to about one half of its total potential-shrinkage characteristic; a driven second heated can assembly for further drying the fabric; a second compressive preshrinkage unit for shrinking the fabric a final amount to comply with predetermined standards, such as, established Sanforized label standards and a driven third can assembly for fully drying the fabric for discharge to a storage facility.

3,691,601

METHOD OF MAKING HOSE CLAMPS

Robert J. Hough, Sarver, Pa., assignor to Oberg Manufacturing Company, Inc., Freeport, Pa.

Filed March 26, 1971, Ser. No. 128,311
Int. Cl. B23p *13/00*
U.S. Cl. 29—150 5 Claims



A metal strip having a width equal to the length of each hose clamp that is to be cut from it is fed forward intermittently. While the strip is stationary parallel slots are punched in it in parallel rows extending transversely of it, with the ends of the rows spaced from the edges of the strip. Strip material between each edge of the strip and the adjacent ends of alternate rows of the slots is stamped out to leave a row of heads along each edge of the strip staggered relative to those along the opposite edge. The head are provided with lugs extending in opposite directions lengthwise of the strip. The lugs are then bent up and an open-bottom screw housing is placed on each head. The screw housings have wide flanges provided with openings receiving the lugs, which are then bent down against the flanges to lock the housings on the heads. After this last operation the strip is fed ahead and severed transversely midway between the leading row of slots and the next succeeding row to form a hose clamp band with a screw housing secured to one end.

3,691,602

Patent Not Issued For This Number

3,691,603

Patent Not Issued For This Number

3,691,604

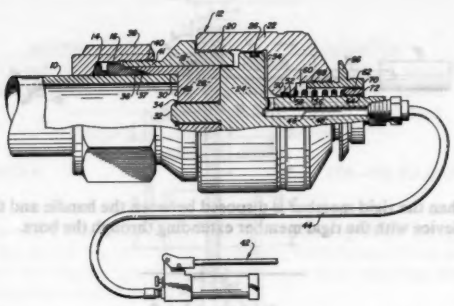
FERRULE SETTING APPARATUS

Leonard P. Spontelli, Seven Hills, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed April 15, 1971, Ser. No. 134,153
Int. Cl. B23p *19/00, 19/04;* B23q *17/00*
U.S. Cl. 29—200 B 18 Claims

Apparatus for swaging a ferrule onto the outer peripheral surface of a cylindrical member such as a tube or rod. The apparatus shown in the drawings includes a piston mounted for reciprocation within a body. The piston is drivingly connected to an anvil-like member which includes a recess in one end for receiving the end of the tube or rod. Carried within the recess is a camming mouth adapted to swage a ferrule inwardly onto the surface of the tube or rod. The body includes means for connection thereto of means for limiting axial movement of

the ferrule received over the end of the tube or rod. Additionally, pressure means are connected in fluid communica-



tion with the interior of the body for driving the piston toward the ferrule and means are provided for measuring the axial movement of the piston relative to the body.

3,691,605

APPARATUS FOR MOUNTING HANDLES TO POTS AND THE LIKE

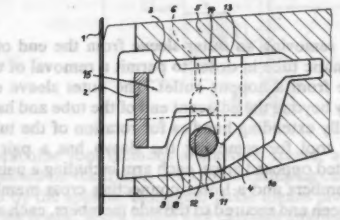
Gunter Witte, Attendorn, Germany, assignor to Gebr. Dingerkus, Attendorn, Germany

Filed April 23, 1971, Ser. No. 136,906

Claims priority, application Germany, April 23, 1970, P 20 19 571.5

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 J **7 Claims**



Apparatus for mounting insulated handles to pots and the like has a supporting portion having a part adapted to be mounted on a wall portion of a pot and the like and a section extending from the pot and defining protrusions. A handle is provided for completely covering the supporting portion and for defining a recess forming shoulders extending perpendicular to the direction of the extension of the section of the supporting portion. These shoulders face away from the part of the supporting portion adapted to be mounted on a wall portion of a pot and the like and is arranged to face towards the protrusions defined on the supporting portion. A substantially elongated spring element is unreleasably arranged in the recess defined in the handle by having its end portion bent about the protrusions and contacting the shoulders. In this manner, the spring element is retained and attaches the handle to the supporting portion.

3,691,606

APPARATUS FOR ASSEMBLING COILS ONTO STATORS OF ELECTRIC MACHINES AND THE LIKE

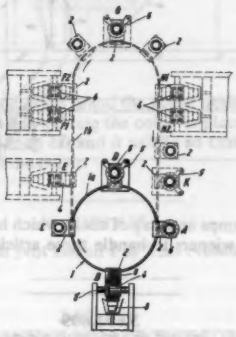
Willie Muskulus, An der Pfaffenmauer 17, 6 Bergen-Enkheim, Germany

Filed April 15, 1971, Ser. No. 134,321

Claims priority, application Germany, April 24, 1970, P 20 19 925.1

Int. Cl. H02k *15/06*

U.S. Cl. 29—205 D **8 Claims**



For assembling wound coils into stator grooves, an apparatus for transporting transfer tools between different stations including a winding station whereat the transfer tools receive wound coils and drawing-in stations whereat the coils on the transfer tools are drawn into the stator grooves. A plurality of transport carriages, each having a transport tool thereon, are moved along a rail in a closed path to the various stations. The size and shape of the path can be varied. Each transport carriage can stop or move along the path independently of the other transport carriages.

3,691,607

HIGH TEMPERATURE BRAZING ALLOY SYSTEM

Ralph J. Bondley, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 18, 1971, Ser. No. 107,011

Int. Cl. B32b *15/02*; C22c *27/00*

U.S. Cl. 29—194 **4 Claims**

A high temperature, low vapor pressure, brazing alloy system is disclosed which is useful for assembling components of electron tubes. The brazing alloy is particularly useful in the assembly of refractory elements such as cathodes and heaters because degradation of emission caused by the metals comprising the brazing alloy is minimal.

3,691,608

APPARATUS FOR INSERTING STICKS IN ARTICLES

Thomas F. Lowrance, 3636 Samuell Blvd., Dallas, Tex.

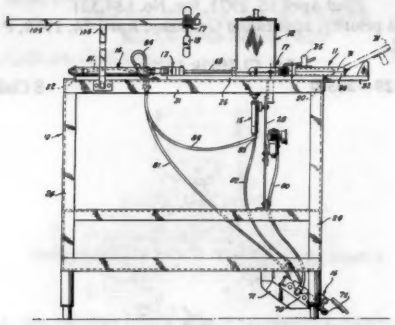
Filed April 22, 1971, Ser. No. 136,504

Int. Cl. B23q *7/10*; B23p *19/04*

U.S. Cl. 29—211 D **9 Claims**

A machine for automatically inserting round holder sticks into food articles such as wieners, includes a food holder for a row of wieners during the inserting operation, a hopper for supplying and aligning sticks to be inserted into the wieners, and a reciprocable carriage including plungers for feeding the sticks from the hopper into the wieners. The hopper includes

agitators for assuring the feed of the sticks to the hopper feed chambers. A portable stick holder, for use with the machine,



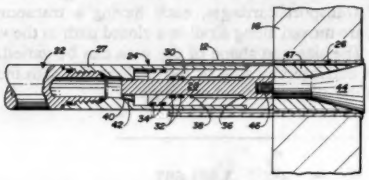
selectively clamps an array of sticks which have been inserted in respective wieners to handle these articles for subsequent processing.

3,691,609

TUBE PLUGGING TOOL

Charles O. Ice, Jr., Long Beach, Calif.; Lanny G. Ice, and Walter S. Frazer, both of Monahans, Tex., assignors to Hydro-Vel Services, Inc., Monahans, Tex.

Filed March 25, 1970, Ser. No. 22,613
Int. Cl. B23p *19/02*
U.S. Cl. 29—252 **14 Claims**



A lance for positioning a plug comprised of a deformable sleeve disposed around a tapered cone at the remote end of a small diameter tube of a heat exchanger or the like is disclosed. A hydraulic actuator forces the sleeve around the tapered member to expand the sleeve into sealing engagement with the tube. In one general embodiment, a small hydraulic actuator is located at the end of the lance adjacent the plug and hydraulic fluid is supplied through the lance. In another general embodiment, the hydraulic actuator is disposed outside the tube, and the sleeve is forced around the tapered member by a tubular sleeve disposed around the lance. In each embodiment, the lance is disconnectable from the plug after the plug has been set. Several specific embodiments are also disclosed.

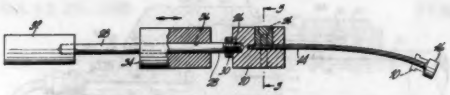
3,691,610

DIE PULLER

Hollis J. Harding, 507 N. Locust St, Onarga, Ill.

Filed Nov. 18, 1970, Ser. No. 90,744
Int. Cl. B23p *19/04*
U.S. Cl. 29—255 **2 Claims**

An elongated flexible member is permanently secured at one end to an enlarged head and is secured at its opposite end to a clamping device. A rigid elongated member is detachably secured at one end to the device and at its opposite end to a handle. A cylinder having an axial bore of larger diameter



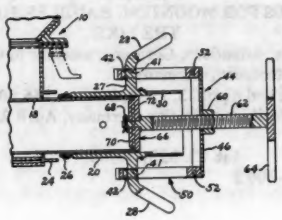
than the rigid member is disposed between the handle and the device with the rigid member extending through the bore.

3,691,611

DEVICE FOR REMOVING AN OUTER SLEEVE FROM A ROTATABLE TUBE

Richard H. Dugge, and John L. Carney, Jr., both of St. Louis County, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,310
Int. Cl. B23p *19/04*
U.S. Cl. 29—261 **2 Claims**



A device for removing an outer sleeve from the end of a rotatable pneumatic tube in order to permit a removal of the pneumatic tube from a hopper outlet. The outer sleeve extends outwardly beyond the adjacent end of the tube and has a pair of outwardly extending handles for rotation of the tube. The device or tool for removing the sleeve has a pair of pivotally mounted opposed arms, each arm including a pair of spaced side members and a lower connecting cross member extending between and secured to the side members, each arm adapted to fit over and receive between the side members an outwardly extending handle on the sleeve. A screw mounted for rotation on the tool has a circular plate which fits within the sleeve and abuts the end of the rotatable tube whereby upon rotation of the screw in one direction the arms pull the sleeve outwardly from the pneumatic tube.

3,691,612

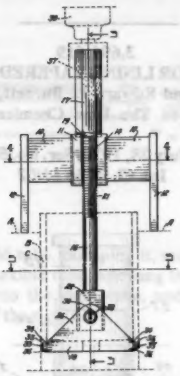
CYLINDER-LINER PULLING TOOLS

Arnold B. Layne, Aurora, Colo., assignor to B. K. Sweeney Manufacuring Co., Denver, Colo.

Filed Dec. 23, 1970, Ser. No. 101,008
Int. Cl. B23p *19/04*
U.S. Cl. 29—266 **10 Claims**

A pull rod, having a tiltable foot member at its lower extremity and an actuating nut as its upper extremity, and provided with a detachable support assembly. The pull rod is inserted in a cylinder liner and the foot member is turned and

placed in contact with the lower extremity of a cylinder liner. The support member is placed on an engine block to support



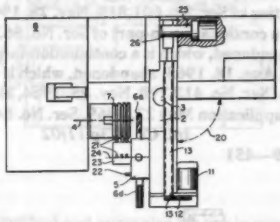
the actuating nut over the cylinder liner and the actuating nut is power rotated to draw the foot member and the cylinder liner upwardly from the block.

3,691,613

MACHINE TOOL WITH PIVOTABLE TOOL CARRIAGE

Georg Walk, Rheydt, Germany, assignor to A Monforts, Monchengladbach, Germany

Filed Jan. 28, 1970, Ser. No. 6,507
Claims priority, application Germany, Jan. 30, 1969, P 19 04 457.6
Int. Cl. B23b *3/16*
U.S. Cl. 29—27 C 2 Claims



Machine tool includes a machine frame, a rotary spindle mounted on the frame, workpiece-clamping chuck means carried by the spindle, elongated guide means pivotally mounted on the frame, and a single tool carriage guidingly displaceable along the length of the guide means and adjustable with the aid of the pivotable guide means into positions wherein tools carried by the carriage can selectively machine a workpiece clamped in the chuck means in directions longitudinal to the axis of the rotary spindle and transverse and inclined thereto.

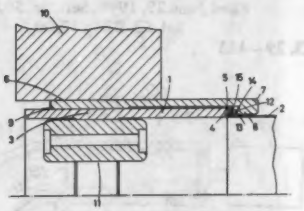
3,691,614

METHOD OF PRODUCING A SEALING-TIGHT JOINT BETWEEN TWO TUBES ON DIFFERENT MATERIALS

Jean Andre Bernard, Barga, and Adamo Renato Faraoni, Ranco, both of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg

Filed Jan. 19, 1970, Ser. No. 4,147
Claims priority, application Belgium, Jan. 24, 1969, P 1211
Int. Cl. B23k *31/02*
U.S. Cl. 29—470.5 4 Claims

A method of producing a sealing tight joint between two tubes one of which has a greater wall thickness than the other. The thinner tube has a collar formed on it which will engage a circumferential groove in the end of the thicker tube when placed in end-to-end relationship. A ring shaped to conform with the collar is placed inside it. A sleeve is slid over the two tubes, this sleeve having an inwardly extending flange which



engages the ring and holds it and the collar against the end of the thicker tube. After welding the collar in place, the thicker tube is worked so as to expand it axially so that the grooved end tightly engages the collar.

3,691,615

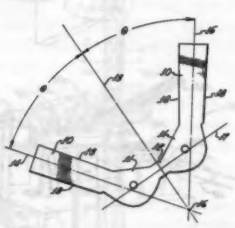
Patent Not Issued For This Number

3,691,616

METHOD OF MAKING ROLLER TUPS FOR FISHING RODS

Otto Immenroth, La Habra, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to Axelson Fishing Tackle Mfg. Co., Newport Beach, Calif.

Division of Ser. No. 44,085, June 8, 1970. This application Sept. 28, 1971, Ser. No. 184,443
Int. Cl. A01k *87/04*
U.S. Cl. 29—434 9 Claims

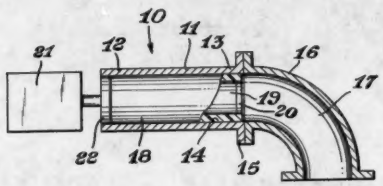


The roller tip comprises a single piece of sheet metal formed and bent into parallel frame sides which are flanged to prevent wear on the line. Each frame side is integral with a semitubular sleeve side portion, and such side portions are connected to each other at upper and lower seams in order to form a sleeve adapted to receive the tip of a fishing rod. A roller is rotatably mounted between the frame sides, by means of axle means extending perpendicularly to such sides. The frame sides are integral with opposite ends of a bridge disposed above the roller and preventing the line from leaving the roller tip, such bridge being so constructed that the portion thereof lying in a medial plane between said frame sides is generally parallel to a tangent to the roller, such tangent intersecting an extended axis of the sleeve on the opposite side of the axle means from such sleeve. In accordance with the method of the invention, a single piece of sheet metal is formed into two elongated legs, two frame sides and a bridge, and each leg is caused to lie at an acute angle to a medial line. The legs are formed into semitubular sleeve sides, the frame sides are flanged and pierced, and the bridge is so bent that the frame sides are parallel to each other and the sleeve sides are caused to meet at their edges for securing together as by soldering.

3,691,617
METHOD OF LINING PIPE FITTINGS AND LIKE ARTICLES

Edward L. Burnett, assignor to The Dow Chemical Company, Midland, Mich.

Filed June 29, 1970, Ser. No. 50,858
Int. Cl. B23p 17/00
U.S. Cl. 29—423 7 Claims

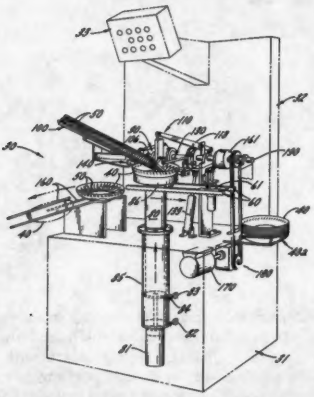


A plastic tube is filled with a material having a low compressive strength. The plastic tube is then forced into a cavity which is to be lined, such as a pipe fitting. The low strength filler material prevents collapse and deformation of the tube as it conforms to the cavity being lined.

3,691,618
AUTOMATIC INSERT ASSEMBLY MACHINE AND METHOD EMPLOYING DEFORMATION AND LINEAR TRANSFER OF WORKPIECES

Raymond C. Achterberg, and Charles L. Bunker, both of Janesville, Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Jan. 19, 1971, Ser. No. 107,806
Int. Cl. B23p 19/00, 15/02; B23q 7/10
U.S. Cl. 29—430 17 Claims

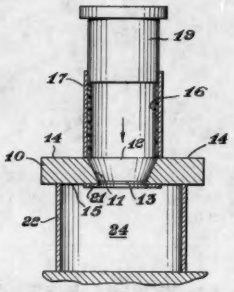


An assembly machine and method are provided for automatically inserting and fixing blade-like foil inserts in a torque converter turbine drum or similar article. The assembly mechanism includes automatic apparatus for accomplishing the requisite assembly motions, including moving a turbine drum which is placed upon a translatable rack to a preliminary position, moving the drum from the rack to a work position upon a supporting mandrel, stripping a foil insert from a feeding magazine, forcing the stripped insert along U-shaped guides to temporarily and resiliently cup or temporarily spring the end of the insert for insertion into the drum, inserting a first foil ear into the drum, thereby locating the foil in a preliminary position, hammering the foil into its final assembled position in the drum, angularly indexing the drum or housing to a successive position so as to receive the next blade-like foil insert, counting the number of angular indexing steps imparted to the drum, and moving the drum with its assembled blade-like foil inserts back to the rack and then out of the assembly mechanism when the requisite number of foils have been inserted.

3,691,619
METHOD FOR LINING TAPERED CAVITIES

Eugene V. Stack, and Edward L. Burnett, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 28, 1970, Ser. No. 58,935
Int. Cl. B23p 11/02
U.S. Cl. 29—451 8 Claims

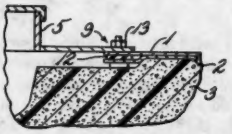


Tapered cavities are lined with a plastic liner such as a reducer filler flange by forcing a deformable plastic tube into the cavity to reduce the diameter of at least the portion of the tube which passes through the cavity and flanges are formed on the plastic tube.

3,691,620
PROCESS OF PROVIDING A FUEL TANK IN A VEHICLE

George B. Harr, 1240 S. Marengo Ave., Pasadena, Calif.

Continuation of Ser. No. 601,818, Nov. 28, 1966, abandoned, which is a continuation-in-part of Ser. No. 563,774, July 19, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,634, Aug. 18, 1965, abandoned, which is a continuation-in-part of Ser. No. 413,790, Nov. 25, 1964, abandoned. This application May 22, 1969, Ser. No. 840,580
Int. Cl. B23p 11/02
U.S. Cl. 29—451 2 Claims



The interior of a fuel cell is filled with reticulated foam which is inserted into the fuel cell by being stuffed through an opening in the wall thereof. The foam may be enclosed by an integument placed in the cell before the foam, or the foam may be stuffed through the opening enclosed in the integument.

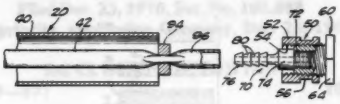
3,691,621
METHOD OF ASSEMBLYING A FLEXIBLE TUBE WITHIN A HANDLE

Edward C. Weston, 13918 Doty Ave., Hawthorne, Calif.

Filed Feb. 25, 1971, Ser. No. 118,896
Int. Cl. B21d 39/00; B23p 19/04
U.S. Cl. 29—455 4 Claims

An extension handle adapted for use with paint rollers and the like in the form of a rigid metal tube having a flexible tube

assembled therein for combined rigidity and lightness. A method is provided for assembling the tube which is plastic in the rigid tube by way of stretching an end part of the flexible

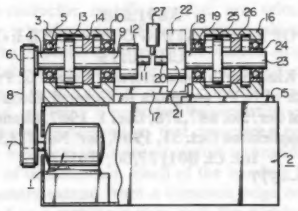


tube out of the rigid tube, clamping it, securing a rigid fitting to the end of the flexible tube, allowing the tube to retract to draw the fitting into the rigid tube, and then securing the fitting to the end of the rigid tube.

3,691,622
METHOD OF AND APPARATUS FOR FRICTION WELDING

Nobuo Takagi, and Takashi Takiguchi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan

Filed Feb. 17, 1970, Ser. No. 12,073
Claims priority, application Japan, Feb. 20, 1969, 44/12813
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 **4 Claims**



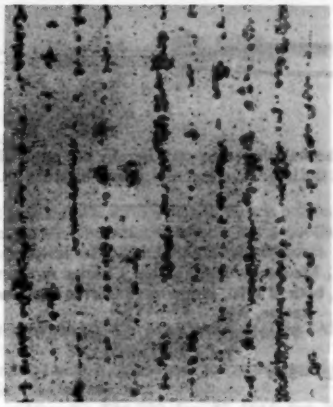
An improved method and apparatus for use in rotary bi-axle type friction welding, utilizing braking and clutching systems applied to both the drive side and driven side spindles. The stopping process of the driven system is controlled by the braking and clutching systems connected to the driven side spindle, and those systems are activated alternately to effectively dissipate the resultant heat energy caused by the stopping process.

3,691,623
PROCESS FOR INCREASING THE WHISKER AND FIBER CONTENT IN A MATRIX

Karl P. Staudhammer, and Vernon H. Reineking, both of Gardena, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 9, 1970, Ser. No. 79,560
Int. Cl. B23k 31/02
U.S. Cl. 29—472.3 **7 Claims**

A process for increasing the whisker content in a matrix comprises the steps of aligning and depositing reinforcing whiskers on a metal substrate, stacking layers of these substrates into a preform assembly, diffusion bonding this assembly to consolidate the preforms into a composite foil and heating the composite 50° to 100° F. above its melting point, while applying a slight pressure thereto. Consequently, some of the molten matrix is forced out from the edges of the com-

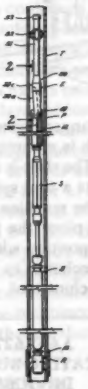


posite. This results in a thinner composite foil having a higher whisker concentration and consequent higher ultimate tensile strength.

3,691,624
METHOD OF EXPANDING A LINER

John C. Kinley, 5815 Royalton St., Houston, Tex.

Filed Jan. 16, 1970, Ser. No. 3,369
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—523 **5 Claims**



A device and method for expanding a tubing liner having a preformed reverse bend by pulling the metal of the liner outwardly to expand the reverse bend and bring the liner into a substantially cylindrical shape inside of a well tubing or other pipe.

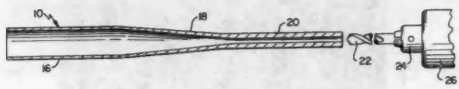
3,691,625
METHOD OF MAKING BALL BAT METAL BODY SYSTEM

George F. Swenck, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed March 19, 1971, Ser. No. 126,206
Int. Cl. B23p 13/04
U.S. Cl. 29—557 **5 Claims**

The hollow metal body for a ball bat is made by swaging one

end of a cylindrical metal extrusion to form the handle portion of reduced diameter, and the swaged end is then drilled out to



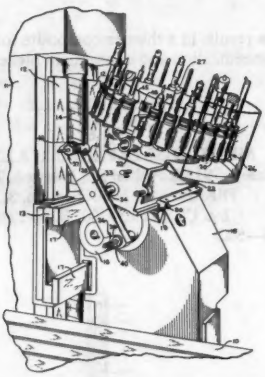
reduce the wall thickness and thereby put more of the metal weight at the large diameter end, where balls are hit.

3,691,626

TOOL CHANGE MECHANISM

Daniel J. Mousseau, Racine, and Charles A. Larsen, Union Grove, both of Wis., assignors to Gorton Machine Corporation, Racine, Wis.

Filed Sept. 10, 1970, Ser. No. 71,079
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **6 Claims**



An automatic tool changer assembly for a machine tool including a slide on which is mounted a tool storage magazine and a tool change arm. The slide is mounted on a spindle head which rotatably supports a tool spindle. The spindle head is movable on an axis of the machine tool. The slide is movable on the spindle head to place the tool change arm and tool magazine into an exact position with respect to the tool spindle, allowing a tool interchange to take place at any position along said axis of the machine tool.

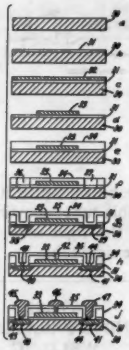
3,691,627

METHOD OF FABRICATING BURIED METALLIC FILM DEVICES

William E. Engeler, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 675,225, Oct. 13, 1967, abandoned. This application Feb. 3, 1970, Ser. No. 8,311
Int. Cl. B01j *17/00*; H01g *13/00*
U.S. Cl. 29—571 **2 Claims**

Electrical conductors and field plates utilized in monolithic integrated circuit components are buried in insulating media by forming a high temperature resistant insulating film on the semiconductor substrate, depositing a metallic film thereover which is non-reactive with the insulator at temperatures of the order of 700° C or higher, and covering the conductive film with another high temperature resistant, non-reactive insulating film. After all fabrication steps for the integrated circuit device are completed, (which steps may optimally include diffusion into the semiconductor subsequent to deposition and encapsulation of the metallic film) contact to the metallic layer is made by etching a hole through the last deposited insulating film at one point with an etchant which is non-reactive with the metallic film, and metallizing the device in that region, making contact with the buried conductor. Such buried



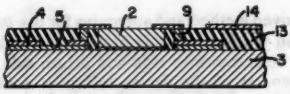
conductors may be utilized as conductors in printed circuit and monolithic semiconductor devices, capacitor plates, noncontacting cross-overs, and as gate electrodes in field-effect transistors, for example.

3,691,628

METHOD OF FABRICATING COMPOSITE INTEGRATED CIRCUITS

Chang Soo Kim, North Syracuse, and Gerald G. Palmer, Liverpool, both of N.Y., assignors to General Electric Company, Division of Ser. No. 687,278, Dec. 1, 1967, abandoned. This application Oct. 31, 1969, Ser. No. 872,989

Int. Cl. B01j *17/00*; H01l *1/16*
U.S. Cl. 29—577 **2 Claims**

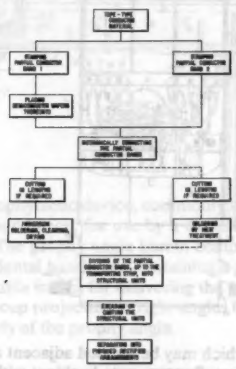


Method of fabricating integrated circuits in which individual semiconductor chips, exhibiting diverse electrical and compositional characteristics may in combination with thin or thick film passive components be applied to a single supporting dielectric substrate, wherein there are provided readily formed coplanar connections to the chips and an ease of registration of the chips with respect to one another and to conductive patterns carried by the substrate. The chips are bonded to the dielectric substrate by means of a strongly adhesive, chemically inert, high quality dielectric material, said chips being applied with the metalized surface thereof flush with that of the dielectric material so that a continuous supporting structure is formed for said coplanar connections. In one specific embodiment the conductive patterns are deposited both on the substrate surface and on the dielectric layer surface, the patterns being connected by extending portions thereof through the dielectric layer.

3,691,629
METHOD FOR PRODUCING SEMICONDUCTOR RECTIFIER ARRANGEMENTS

Winfried Schierz, Roth b. Nurnberg, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronick m.b.H., Nurnberg, Germany

Filed Dec. 23, 1970, Ser. No. 101,088
Claims priority, application Germany, Dec. 23, 1969, P 19 64 481.6
Int. Cl. B01j 17/00; H01l 1/16
U.S. Cl. 29—577 10 Claims



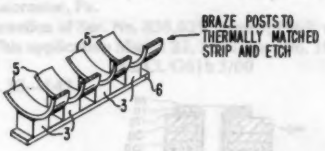
An improved method of simultaneously making a plurality of semiconductor rectifier circuit arrangements of the type wherein semiconductor rectifier wafers are selectively inserted at the points of overlap of two planar conductors which then contact the opposite surfaces of the wafers. According to the method of the invention a pair of planar partial conductor bands are formed from a strip of planar conductive material so that each band contains a periodically repeating pattern of conductors which are formed so that associated patterns on the two bands will form the desired circuit arrangement when placed on top of one another. Each of the bands is formed so that its conductors extend from a common edge zone which may be utilized as a transport strip with the conductors of a first of the bands being provided with planar sections which can hold and support a semiconductor wafer. The wafers are then placed at the desired locations on the provided sections of the first partial conductor band, the other partial conductor band is then placed thereover with the proper orientation so that each wafer is between an overlapping pair of conductors and contacted on both of its surfaces, and then the two partial conductor bands are mechanically fastened together by means of their edge zones. The resulting structure is then subjected to the further processing steps of permanently bonding the wafers to the contacting conductors, cutting or separating the conductor pattern, if required, into the desired circuit arrangements and encapsulating of the individual rectifier devices. Finally, the conductors are severed from the common edge zone.

3,691,630
METHOD FOR SUPPORTING A SLOW WAVE CIRCUIT VIA AN ARRAY OF DIELECTRIC POSTS

James E. Burgess, 205 Silvia Court, Los Altos, Calif.; Louis R. Falce, 3932 Lonesome Pine Road, Redwood City, Calif.; Robert L. Graham, 438 Matthews Court, Milpitas, Calif., and Allan W. Scott, 1272 Windimer, Los Altos, Calif.

Filed Dec. 10, 1969, Ser. No. 883,733
Int. Cl. H01p 11/00
U.S. Cl. 29—600 6 Claims

A slow wave circuit is supported within a surrounding metallic barrel portion of a traveling wave tube via the intermediary of an array of dielectric posts each of which is brazed at one end to the slow wave circuit and at the other end to the barrel. During fabrication of the tube, the post structures are

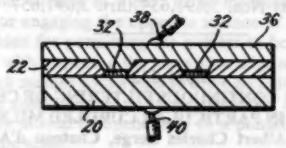


first bonded to a metallic strip which in turn is bonded to the inside of the barrel. The strip preferably has a coefficient of thermal expansion equal to that of the dielectric posts.

3,691,631
METHOD OF MAKING A VOLTAGE ACTUATABLE SWITCH

Siri R. Bhola, St. Louis, Mo., assignor to Conductron Corporation, St. Charles, Mo.

Division of Ser. No. 794,283, Jan. 27, 1969, Pat. No. 3,546,540. This application Jan. 29, 1970, Ser. No. 12,535
Int. Cl. H01h 11/00
U.S. Cl. 29—622 7 Claims



A voltage actuated switch comprises a conductor, an essentially defect-free layer of insulating material which has a portion thereof that overlies and engages at least a part of a surface of that conductor and that has a predetermined thickness and resistivity to enable it to have a relatively high breakdown voltage, a tiny area of that layer of insulating material which has a thickness and resistivity that enable it to have a predetermined lower breakdown voltage, and an electrode which overlies and engages said tiny area of said layer of insulating material. The tiny area of the layer of insulating material will normally insulate the electrode from the conductor; but it will respond to a voltage, which is higher than the predetermined breakdown voltage of that tiny area but which is lower than said relatively high breakdown voltage, and which is applied across that electrode and that conductor, to break down and permit an irreversible, low-resistance connection to form between that electrode and that conductor.

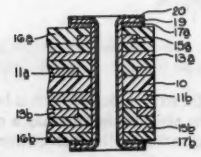
3,691,632
METHOD OF MAKING MULTI LAYER CIRCUIT BOARDS

John Henry William Smith, Coventry, England, assignor to Microponent Development Ltd., Birmingham, England

Filed June 10, 1970, Ser. No. 45,073
Claims priority, application Great Britain, June 13, 1969, 30,014/69
Int. Cl. B41m 3/08
U.S. Cl. 29—625 9 Claims

A multi-layer circuit board assembly including a plurality of stacked conductor patterns electrically interconnected with one another within the assembly is formed by a method in which metal conductor patterns are formed sequentially and initially without electrical interconnection. Each successive conductor pattern is covered with a continuous layer of an insulating material so that the next conductor pattern which is formed on such insulating layer is totally insulated from the preceding conductor pattern. The insulating material is

chosen to be of such a nature that it will not smear on a drill subsequently passed through the assembly, and the assembly is drilled through to form bores at selected positions which intersect the conductor patterns selectively where they require to



be electrically interconnected. Such electrical interconnection is then established by depositing metal within the bores. Preferably the step of depositing metal in the bores forms an integral part of the process of forming the outermost conductor patterns.

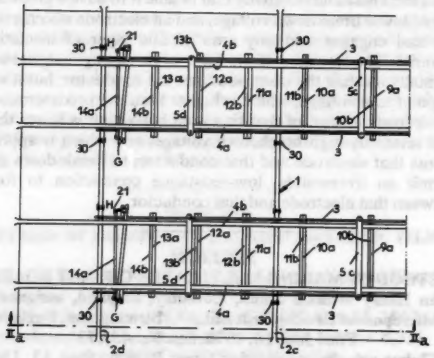
ERRATA

For Classes 29—25 thru 29—95 see:
Patents Nos. 3,691,653 thru 3,691,657

3,691,633
DEVICE FOR CONTINUOUS FILTERING OF CHEESE CURD, IN PARTICULAR CURDLED MILK

Jacques Marie Albert Charles Berge, Chateau d'Areyt, 65-Prechac, France

Filed Nov. 4, 1970, Ser. No. 86,707
Claims priority, application France, Nov. 6, 1969, 6938274
Int. Cl. A01j *25/12*
U.S. Cl. 31—46 13 Claims

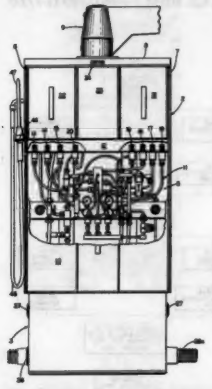


The device of the invention comprises a frame, a roll track, filtering elements adapted to move on said roll track, presses each of which is composed of a pair of vertical press elements movable with said filtering elements from the upstream end of said roll track to its downstream end, said roll track being divided into several sections, means of relative displacement of the elements of each press nearer to one another in some of said sections to press the filtering elements contained between said press elements, and means for feeding and dispensing cheese curd in said filtering elements.

3,691,634
DENTAL UNIT CONSTRUCTION

Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to Dental Unit Construction, Canton, Ohio

Filed June 16, 1971, Ser. No. 153,659
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 11 Claims

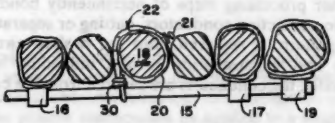


A dental unit which may be located adjacent a dental chair, including a compact, floor mounted cabinet with a dental tray assembly pivotally mounted thereon by a conventional adjustable tray arm. The tray assembly includes a hollow support platform and a removable tray portion. A plurality of usual dental handpieces and a syringe are supported upon the support platform, electrical, air and water connections therefore being mounted therein, and normally concealed by the removable tray portion. A control box therefor is mounted on the support platform. Water and air control and electrical control panels are hingedly mounted in the cabinet, adapted to be closed and concealed when not in use, a pilot light is mounted on the cabinet and front and side doors mounted thereon providing access to the instrument supply and regulation equipment located therein.

3,691,635
ORTHODONTIC SYSTEM FOR TURNING A TOOTH

Melvin Wallshein, 8645 Bay Parkway, Borough of Brooklyn, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,557
Int. Cl. A61c *5/08*
U.S. Cl. 32—14 A 10 Claims



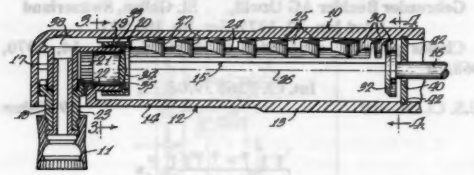
The system shown uses a band tightly fitted onto the tooth to be moved by a part turn about its longitudinal axis. There is an arch wire across the buccal face of the tooth, rigidly fixed. An elongated member of filament material, intermediate its ends, is of resilient tension spring structure. One end of said member is held fast to the band and is at least a part turn thereon wound in the direction the tooth is to be turned. With the spring in tensed condition, the other end of this member is held fast to the arch wire. As the spring contracts, the tooth will be turned in like manner as a top is started to spin upon withdrawal of its cord. The spring may be true helical, flattened helical or planar zig-zag.

3,691,636

DENTAL PROPHYLACTIC DEVICE

Fritz Deuschle, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc.

Filed April 5, 1971, Ser. No. 130,961
Int. Cl. A61c 3/06
U.S. Cl. 32—58 7 Claims



A dental prophylactic device, commonly known as a prophy angle dental handpiece, for use by a dentist in cleaning a patient's teeth. The prophy angle herein comprises a disposable prophylactic dental handpiece containing a supply of abrasive paste and suitable means for delivering the paste progressively to a polishing cup projecting at right angles from the generally cylindrical body of the prophy angle.

3,691,637

Patent Not Issued For This Number

3,691,638

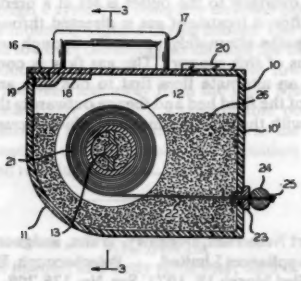
Patent Not Issued For This Number

3,691,639

CASING FOR REEL MOUNTED CORD

Mangin E. Roeseler, 12465 James St., and David D. Richards, 1325 S. 124th St., both of Brookfield, Wis.

Filed May 27, 1969, Ser. No. 828,150
Int. Cl. B44d 3/38
U.S. Cl. 33—87 3 Claims



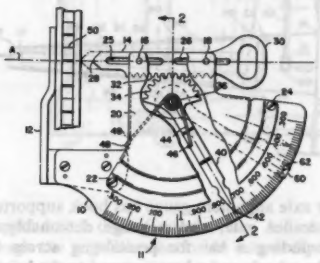
A casing containing a reel mounting cord for holding a marking cord. The container is designed to hold powdered chalk to keep the cord covered therewith.

3,691,640

DISC BRAKE ROTOR THICKNESS WEAR AND SCORE DEPTH GAUGE AND METHOD OF USING SAME

Frederick R. McFarland, and Walter L. Diffenderfer, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

Continuation of Ser. No. 830,029, June 3, 1969, abandoned.
This application March 22, 1971, Ser. No. 101,154
Int. Cl. G01b 5/00
U.S. Cl. 33—147 F 4 Claims



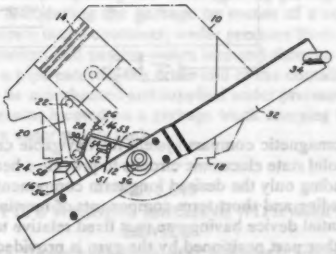
A gauge is provided with a plate for positioning the gauge against one surface of a part to be measured, and a biased pointer for engaging the opposite surface of the part. Means are provided for permitting the pointer to be moved perpendicularly with respect to the plate. One edge of the pointer is a gear which meshes with a gear to drive an indicator which amplifies the gauge reading on an arcuate scale. A second indicator can be moved independently to a plurality of fixed positions on the scale.

3,691,641

TOOL FOR ESTABLISHING IGNITION TIMING OF A RECIPROCATING INTERNAL COMBUSTION ENGINE

John M. Bell, Dearborn, and Robert A. Mooney, Orchard Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed March 15, 1971, Ser. No. 124,082
Int. Cl. G01b 3/30
U.S. Cl. 33—181 AT 5 Claims

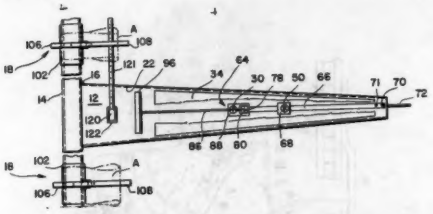


An elongated bar that engages the engine crankshaft for rotation therewith has a pad for contacting a pan rail of the engine block when the number one piston of the engine is at its top dead center position. A pin slidable in the bar then is extended to position a timing plate on the engine block. Tightening the timing plate in this position establishes accurately the location of the plate relative to the number one piston.

3,691,642
TRAILER AXLE ALIGNMENT GAUGE

William C. Nolte, Annapolis, and Burtis M. Tyler, Fishing Creek, both of Md., assignors to Fishing Creek Industries, Inc.

Filed July 6, 1970, Ser. No. 52,405
Int. Cl. G01b 3/14
U.S. Cl. 33—193 13 Claims

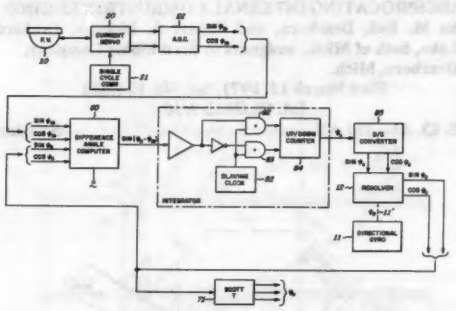


A trailer axle alignment gauge has hook supports for hanging on a trailer axle, and a gauge detachably supported thereby including a bar for positioning across the trailer between the wheels and a base secured to the bar to be positioned along the trailer bed axis and carrying a lever system having vertical pivots and including an indicator and a connector for connection to the king pin: a measuring device is provided on the base to position it relative to the trailer bed axis.

3,691,643
GYROMAGNETIC COMPASS SYSTEM

Donald H. Baker; David R. Brickner, and Kenzel P. Manning, all of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Dec. 18, 1969, Ser. No. 886,164
Int. Cl. G01c 17/02
U.S. Cl. 33—222 8 Claims

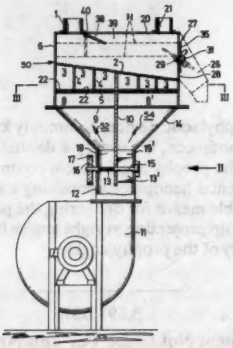


A gyromagnetic compass system for navigable craft which utilizes solid state electronic circuits to provide a heading output including only the desired long term components of magnetic heading and short term components of inertial heading; a differential device having one part fixed relative to the gyro and another part positioned by the gyro is provided whereby the output of the differential normally includes both short and long term components of inertial heading; the differential output is compared with the magnetic heading components and the resulting difference output signal is integrated and applied to the fixed part of the differential device, whereby the output of the differential device includes only the long term components of magnetic heading and the short term components of inertial heading. The improvement herein disclosed greatly increases the reliability and maintainability of such a system by eliminating all electromechanical devices and by processing all the involved data in wholly solid state electronic computation circuits. One embodiment employs a digital computer for performing the computation function.

3,691,644
METHOD AND ARRANGEMENT FOR THE CONTINUOUS THERMAL TREATMENT OF GRANULAR MATERIAL WITH A GAS

Hans Schnitzer, Winterthur, Switzerland, assignor to Gebrueder Buehler AG Uzwill, St. Gallen, Switzerland

Filed Jan. 12, 1971, Ser. No. 105,922
Claims priority, application Switzerland, Jan. 14, 1970, 468/70
Int. Cl. F26b 39/08
U.S. Cl. 34—10 19 Claims



A device for the continuous thermal treatment of a granular material by means of a gas comprises a container having an inlet for the granular material which opens into a chamber arranged above a stationary gas-permeable material support which may be in the form of an inclined perforated wall. The container includes walls around the support, one of which at least includes a material outlet, for example, which is arranged at the lower end of the support. A gas is directed upwardly against the support at a plurality of separated areas in a flow stream which is regulated to maintain the material in a homogeneous loose fluid bed above the support. Means are provided at the outlet for effecting an infinitely vertically adjustable overflow. A throttling device is arranged in the flow paths of the fluid at a location before the support in order to selectively vary the velocity of gas flowing through the support and along the feed travel of the fluid bed of granular material. In accordance with the method of the invention, the granular material is directed into the chamber above the stationary support and the overflow to the outlet is set at a predetermined level. Thereafter, a treatment gas is directed through at least two distinct paths alternately upwardly through separate divided portions of this support. The gas flow is controlled so that there is an alternate flow first to one side and then to another side of the fluid bed and thence outwardly through the outlet along with the granular material which moves over the bed level.

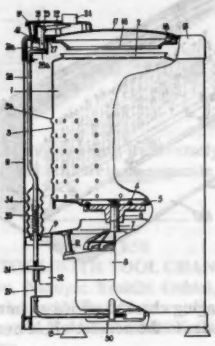
3,691,645
SPIN DRIERS

Barry Herbert Nethersell, Deganwy, Wales, assignor to British Domestic Appliances Limited, Peterborough, England

Filed March 18, 1971, Ser. No. 125,708
Claims priority, application Great Britain, March 20, 1970, 13,486/70
Int. Cl. F26b 17/24
U.S. Cl. 34—58 10 Claims

A spin drier having a mechanical interlock for locking the lid in a closed condition and enabling drive means to rotate

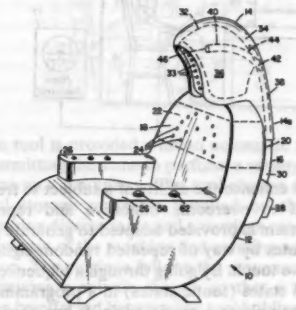
the drum. When the interlock is released, the drum is brought to a halt, while the lid is unlocked after a delay sufficient for the drum to come to rest, the delay being determined by hydraulic or pneumatic damping means mechanically coupled to the interlock. The interlock is released by releasing a latch, allowing the lid to open by a small amount, not sufficient to permit access to the drum.



3,691,646
HAIR DRYER

Hector Michael Ruffolo, 13369 McCulloch, Saratoga, Calif.

Filed Jan. 22, 1971, Ser. No. 108,830
Int. Cl. F26b *19/00*
U.S. Cl. 34—90 14 Claims



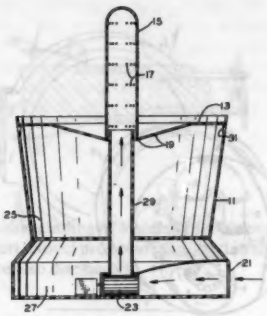
A chair-type hair dryer wherein the flow of drying air is conducted through a system of obliquely directed passageways in a liner shell mounted within a drying helmet. The passageways are oriented to direct the drying air through the user's hair in a direction following the contour of the head toward the rear portion of the head and away from the face. Means are provided for selectively diverting a controllable portion of the drying air through a plurality of apertures in the back of the chair and against the user's back and shoulders providing a soothing and relaxing effect.

3,691,647
WIG DRYER

Marshall D. Snyder, and Betty A. Snyder, both of 2802 Dodge Ave., Fort Wayne, Ind.

Filed July 1, 1970, Ser. No. 51,647
Int. Cl. F26b *9/00*
U.S. Cl. 34—104 4 Claims

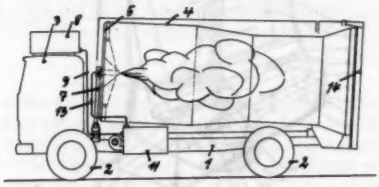
The present invention relates to a method and apparatus for decreasing the drying time required for a wig after washing. The wig is supported peripherally and centrally with the intermediate portions freely suspended in air over a base for catching liquid which drips from the wig. Air may also be forced through the wig from the inside outwardly to further decrease drying time.



3,691,648
APPARATUS FOR DAMPENING GARBAGE IN A GARBAGE LOADING TRUCK

Johann Kraus, Kissing, Germany, assignor to Keller & Knappich GmbH, Augsburg, Germany

Filed Feb. 2, 1971, Ser. No. 111,893
Claims priority, application Germany, Feb. 9, 1970, P 20 05 793.6
Int. Cl. F26b *19/00*
U.S. Cl. 34—227 2 Claims



A means for dampening and disintegrating garbage including means introducing the garbage by means of a conveyor, such as a screw into a container, under pressure from one end of the container, and passing steam into and through the garbage from a pipe entering the other end of the container. The steam may be superheated and supplied under pressure from a steam generator located on a garbage truck carrying the container and a water supply tank.

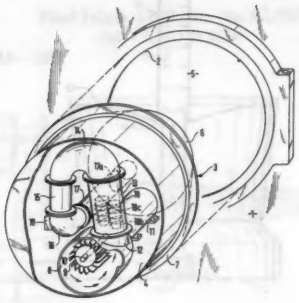
3,691,649
DRUM-TYPE WASHING MACHINE WITH A DRYING DEVICE

Ernst Pigors, Niederwarnsbach, near Morsbach, Germany, assignor to Heinrch Schaumann & Co. GmbH, Morsbach/Seig, Germany

Filed Feb. 24, 1970, Ser. No. 13,355
Claims priority, application Germany, Sept. 19, 1969, P 19 47 627.8
Int. Cl. D06f *29/00*
U.S. Cl. 34—243 5 Claims

hot air drying washables. The apparatus utilizes a centrifugal blower in conjunction with electrically resistive heating ele-

ments in order to effectuate the desired air fluid movement and heat rise of the air. Also incorporated in the drying apparatus is a closure valve that permits complete isolation between the washing fluid and dryer duct work.

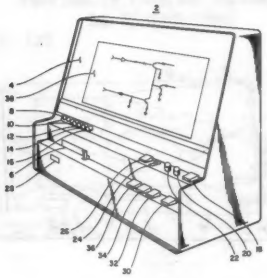


3,691,650

AUDIO/VISUAL TEACHING DEVICE

Floyd L. Arnold, Marlboro, and James R. Patmore, Neptune, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Dec. 11, 1970, Ser. No. 97,082
Int. Cl. G09b *5/06*
U.S. Cl. 35—8 A **7 Claims**



A portable self-contained drying apparatus for detachable securement to the front of a drum-type washing machine for

The specification discloses an audio/visual teaching device capable of operation in either a programming mode or in a playback mode. In the programming mode, an operator may produce a magnetic tape having desired voice information and position information which can later be used on other of the devices so that the voice and the position will be reproduced.

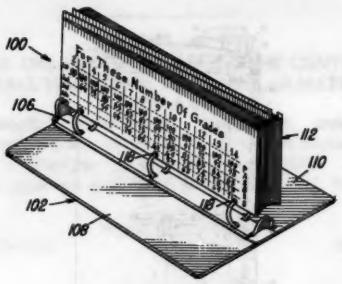
3,691,651

SCHOLASTIC AVERAGING DEVICES

Willie Paul Lemmons, 700 W. Graham, Shelby, N.C.

Continuation-in-part of Ser. No. 754,121, Aug. 1, 1968, abandoned. This application Sept. 10, 1970, Ser. No. 70,947
Int. Cl. G09b *19/00*
U.S. Cl. 35—48 R **5 Claims**

Grade averaging systems based upon a linear graph principle where a plurality of values are progressively accumulated in relation to the differences between the integer 100 (representing a perfect score) and value of various grades (less than 100) being averaged, more particularly using either graphical means or cards representing graphical means, collecting the cumulative differences and substituting them into a



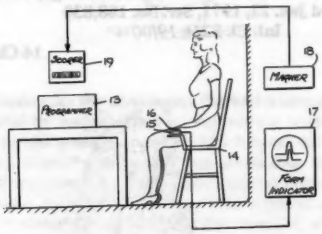
precomputed averaging chart to afford an immediate average of a plurality of grades to the nearest whole number.

3,691,652

PROGRAMMED SYSTEM FOR EVOKING EMOTIONAL RESPONSES

Manfred E. Clynes, Lawrence Lane, Palisades, N.Y.

Filed June 1, 1971, Ser. No. 148,428
Int. Cl. G09b *19/00;*
U.S. Cl. 35—22 R **7 Claims**



In order to enhance the ability of a subject to freely express emotion and to overcome inhibitive and repressive tendencies, a system is provided adapted to generate generalized emotional states by way of repeated random signal initiation and expressive touch. By going through a sequence of generalized emotion states (sentic states) in a programmed manner, the subject completes a sentic cycle. It has been found that such sentic cycles serve to relieve certain psychosomatic disorder symptoms.

3,691,653

Patent Not Issued For This Number

3,691,654

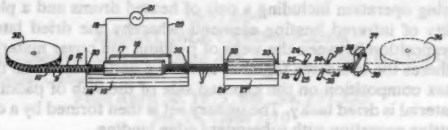
METAL FOIL LEAD MANUFACTURE

Harvey V. Siegel, Mayfield Heights, Ohio, assignor to General Electric Company

Filed May 29, 1969, Ser. No. 828,863
Int. Cl. H01j *9/16*
U.S. Cl. 29—25.18 **10 Claims**

A metal foil lead for sealing into vitreous material is comprised of a short length of metal foil ribbon having an etched tongue end portion with a feathered edge completely therearound and an unetched contact end portion. The foil leads may be made by forming a metal foil ribbon with slots in

one side edge thereof at spaced points therealong, electrolytically etching the slotted side only of the ribbon to feather the



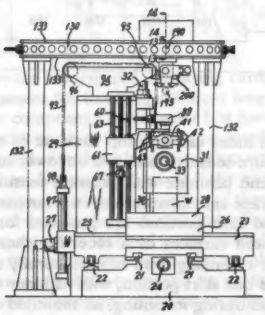
exposed edges thereof, and then transversely severing the ribbon at each of the slots therein to separate it into individual foil leads.

3,691,655

MACHINE TOOL WITH TOOL CHANGE DEVICE

Mikishi Kurimoto, Nagoya; Yoshiki Ochiai, Okazaki; Keniti Munekata, Kariya, and Kenji Nomura, Ogawa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariyi-shi, Aichi-ken, Japan

Filed Jan. 15, 1971, Ser. No. 106,717
Claims priority, application Japan, Jan. 15, 1970, 45/3995
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 8 Claims



A machine tool is provided with an automatic tool change device for permitting the same to perform a variety of machining operations on a workpiece. The tool change device comprises a tool storage magazine installed on the floor for removably storing diverse tools and a carriage mounted on an upstanding column of the machine and carrying a tool holding device thereon. The carriage follows the movement of a spindle head receiving a spindle therein so that a tool change operation can be effected between the tool holding device and the spindle by a main transfer arm immediately following a machine operation. Means are also provided for rendering the following movement of the carriage inoperative so that a tool change operation by a sub-transfer arm may be performed between the tool holding device and the tool storage magazine during the machining operation.

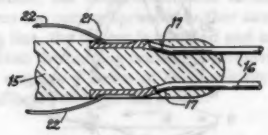
3,691,656

METHOD OF MAKING A JOINT

Mitsuaka Mochizuki, 3-11 Minamimachi 2-chome, Suma-ku, Kobe; Minoru Tanaka, 638-27, Aza Shimizu, Okuradani, Akashi, and Tadataka Koyama, 11-30 Nogami 3-chome, Takarazuka, all of Japan

Division of Ser. No. 697,554, Dec. 16, 1967, Pat. No. 3,574,931. This application June 1, 1970, Ser. No. 54,072
Claims priority, application Japan, March 30, 1966, 41/20572; July 25, 1966, 41/48016; July 29, 1966, 41/50279; Aug. 9, 1967, 42/46762
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 2 Claims

Resistance type temperature measuring device characterized by improved securement of the terminal leads to the wire of the resistance element and the encapsulation of the element. The disclosure also includes apparatus for effecting



certain steps in the winding of a coiled resistance element on a dielectric support. Novel procedures utilized in the fabrication of the device are also disclosed.

3,691,657

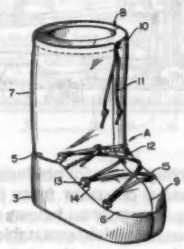
Patent Not Issued For This Number

3,691,658

ARTICLE OF FOOTWEAR

Nicholas Di Perno, 1131 Godin Ave., Verdun; Paul Stiefenhofer, 343 Grosvenor Ave., Westmount, and Thomas Barbeau, 5859 Coolbrook Ave., Montreal, Quebec, all of Canada

Filed March 29, 1971, Ser. No. 128,703
Int. Cl. A43b *1/10*
U.S. Cl. 36—4 9 Claims



An article of footwear is described in the form of a calf-length boot for cold weather wear. The boot assembly comprises an inner boot and an outer shell, the inner boot being formed in a boot shape from a relatively thick layer of soft, pliable foam plastic material and having sufficient dimensional rigidity to maintain an erect boot shape. The outer shell has a sole portion and an upper portion, the sole portion being of a traction material with a wear resistant surface and being peripherally joined to an upper portion of thin, pliable sheet material. The inner boot fits snugly within the outer shell to form an erect boot assembly.

3,691,659

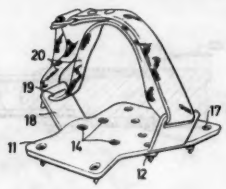
NON-SLIP SAFETY SOLE CLAMPONS

Kazunari Nakajima, 8-21, 3-chome, Kema-cho, Miyakojima-ku, Asaka-shi, Osaka-fu, Japan

Filed Feb. 1, 1971, Ser. No. 111,435
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.6 1 Claim

Non-slip safety sole clampons comprising a sole or base board that is detachably fixable to the underside of each boot, a number of generally hemispherical bulges being integrally formed in a predetermined arrangement on the underside of

said base board, screw holes being formed through said bulges, screws being screwed therethrough from the upper



surface of the base board so that the ends of said screws may protrude through the bulges to constitute claws or spikes.

3,691,660

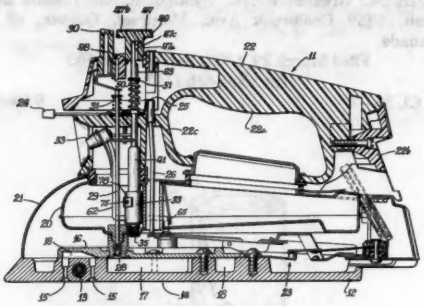
ELECTRIC PRESSING IRON

Jerry P. Gronwick, Park Ridge; Douglas F. Illian, Oak Park, and Donald J. Westphal, South Elgin, all of Ill., assignors to Sunbeam Corporation, 02, Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,792

Int. Cl. D06f 75/06

U.S. Cl. 38—77.83 **12 Claims**



A pressing iron having means for producing a water spray or a pressurized discharge of steam from the soleplate. The means for operating the spray and steam including a single manually actuable control which is rotatable to predetermined positions to select the spray or the steam discharge and is movable axially to produce tHe selected spray or steam discharge.

3,691,661

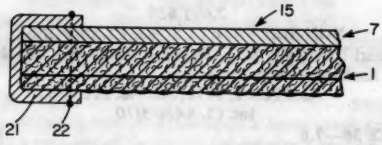
UNITARY IRONING TABLE PAD AND COVER SET AND METHOD OF MANUFACTURE

George J. Steinbronn, Philadelphia, Pa., assignor to Proctor-Silex Corporation, Phila., Pa.

Filed Jan. 8, 1971, Ser. No. 105,048

Int. Cl. D06f 81/14

U.S. Cl. 38—140 **9 Claims**



A unitary pad and cover set for an ironing table and its method of manufacturer wherein a web of conventional, needle punched, cotton-rayon pad material is treated on both of its sides with a flexible, acrylic latex composition that dries tacky and is superimposed over a web of conventional aluminized cotton cover material. A unitary set is achieved by a drying operation including a pair of heated drums and a plurality of infrared heating elements whereby the dried latex composition between the webs of padding and cover material adheres the two webs together to form a unitary web and the latex composition on the exposed side of the web of padding material is dried tacky. The unitary set is then formed by a die cutting operation with subsequent edge binding.

3,691,662

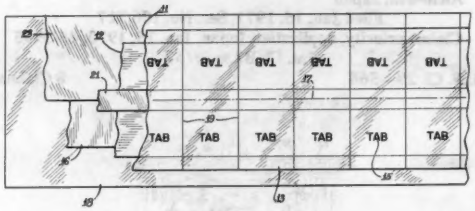
LAMINATED INDEX TAB CONSTRUCTION

Walter F. Cunningham, Des Plaines, Ill., assignor to Superior Tabbies Incorporated, Elk Grove Village, Ill.

Filed March 29, 1971, Ser. No. 128,886

Int. Cl. G09f 3/16

U.S. Cl. 40—23 A **6 Claims**



Laminated index tab with top laminate of transparent film having pressure-sensitive adhesive on lower surface, an intermediate legend laminate with pressure-sensitive adhesive on its lower surface and narrower than top laminate, whereby adhesive-coated skirt portions are provided for attachment of tab to opposed surfaces of a receiving sheet, and a lower opaque filler extending from center laterally short of edge of tab to define one skirt portion, with its inner edge facilitating folding of tab during mounting, all mounted on carrier strip. Tab edge color coding provided by color ink on legend laminate or strip of color film between latter and top laminate, and optional strip of partial release paper in plane of filler extending from inner edge of latter past skirt portion at that edge of tab to facilitate removal of tab from carrier and attachment of other skirt portion to a sheet requiring additional processing with tab unfolded.

3,691,663

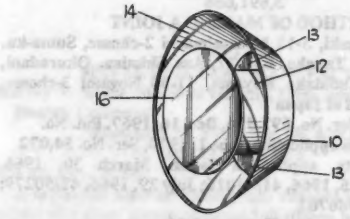
REFLECTING ADVERTISING SIGN

John Arthur Caven, Kirby Muxloe, and Robert Winton Caven, Ringwood, both of England, assignors to John A. Caven and Marjorie A. Caven, Kirby Muxloe, Leicester, England

Filed Dec. 3, 1968, Ser. No. 780,660

Int. Cl. G09f 1/00

U.S. Cl. 40—125 **4 Claims**



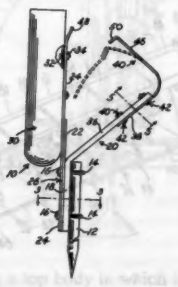
A reflecting advertising sign comprises a column having an outer surface with mirror-image advertising matter thereon,

an inclined reflective surface around the column to reflect the said matter, and a disc for advertising matter on the end of the column, the said disc extending beyond the said outer surface.

3,691,664
ADJUSTABLE CARD HOLDER
Alexander Stoian, 111 Raglan Ave. Apt. 1606, Toronto, Ontario, Canada
Filed April 26, 1971, Ser. No. 137,125
Int. Cl. G09f 1/10
U.S. Cl. 40—124.4 3 Claims

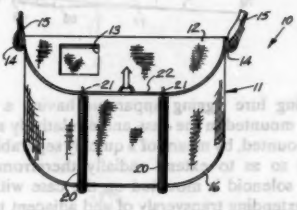
A card holder for holding and displaying cards is provided with adjusting means for handling different lengths of cards. The card holder comprises a rectangular box having a plurality of compartments and a cover slidably mounted on said box. The cover is provided with a plurality of slots which communicate with the said compartments and the cards are positioned in the compartments with a portion of the card projecting out of the said slots. In the preferred embodiment a plurality of partitioning members inclined to the vertical back wall of the box define the compartments. Guide members are provided on the cover and slidably engage the partitioning members. Reciprocating movement of the cover adjusts the length of the compartments between predetermined limits to accommodate different lengths of cards. Fastening means are provided for releasably fixing the cover in the adjusted position required.

3,691,665
FISHING POLE MOUNT
Burton M. Niles, Reedsport, Oreg., assignor to Tackle and Gear, Inc., Reedsport, Oreg.
Filed April 1, 1971, Ser. No. 130,176
Int. Cl. A01k 97/00
U.S. Cl. 43—15 7 Claims



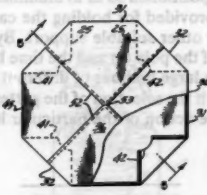
A sturdy, inexpensive, fishing pole mount of extreme simplicity and dependability is provided which includes a supporting post adapted to be driven into the ground or otherwise fixed in a more or less upright position, a spring carried pole holder mounted on the post, and a spring trigger adapted when the carrier spring and the trigger spring are both put under strain and inter-engaged, to detain the holder in a cocked condition, the construction and arrangement being such that when the carrier spring is further stressed by a pull on the fishing line, the trigger is released and is carried by its spring away from the holding position. The carrier spring then springs free, causing a strike of mechanically limited magnitude to be effected through the holder.

3,691,666
FISHING CREEL
Harold O. Herdwig, 5985 Lemon St., E. Petersburg, Pa.
Filed May 14, 1970, Ser. No. 37,145
Int. Cl. A01k 97/00
U.S. Cl. 43—54.5 R 3 Claims



A device for carrying fish comprising a wicker basket or the like having an upper cover of the same material as the sides, the bottom portion being hinged so as to quickly dump the fish therefrom. The bottom wall includes a plurality of openings for drainage of water and has a pair of spaced apart slotted openings for engaging one end of springs, the other end of springs engaging the upper edge of the basket portion of the device in order to keep the bottom wall closed.

3,691,667
FOLDABLE MINNOW TRAP
Francis D. Illinger, 527 E. Mich. St., Orlando, Fla.
Filed Oct. 30, 1970, Ser. No. 85,454
Int. Cl. A01k 69/06; A01m 23/08
U.S. Cl. 43—65 2 Claims



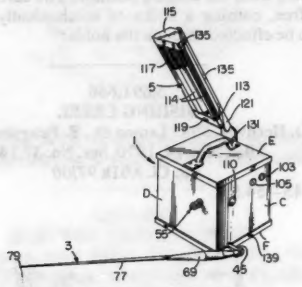
A collapsible minnow trap featuring compactness in storage and simplicity in manufacture is made from a flexible sheet of resilient material that is precut, folded and heat sealed along its edge portions to provide a two layer flat, preferably rectangular, structure with apertured corners. The structure is manipulatable by the fisherman into a self-sustaining creased operational minnow trap structure in which the chamber of the trap is wholly defined by the flexible sheet and in which the corners are tucked inwardly to provide inlets to the chamber.

3,691,668

AUTOMATIC ELECTRIC JIG-FISHING DEVICE

Richard W. Strebig, 2524 Priscilla Lane, Fort Wayne, Ind.

Filed April 30, 1971, Ser. No. 138,926
Int. Cl. A01k 97/12
U.S. Cl. 43—19.2 23 Claims



A fishing lure jigging apparatus having a case, a shaft rotatably mounted in the case and a relatively short, stiff fishing rod mounted, by means of a quickly separably coupling, on the shaft so as to extend radially therefrom. A relatively powerful solenoid is mounted on the case with its armature plunger extending transversly of and adjacent to said shaft. A lever connecting said armature so as to oscillate the shaft as the armature reciprocates, this arrangement being such that energization of the solenoid moves the armature and shaft so as to raise the tip of the pole. A spring acts to eject the armature from the coil and to move the outer end of the armature into contact with an adjustable stop which thus determines the effective length of the solenoid stroke as well as the lowermost position of the rod tip. A rechargeable lead-acid storage battery is mounted in the case and supplies power to the solenoid through an electronic pulsing circuit which is adjustable to vary the pulsing rate throughout a relatively wide range. Signal means are connected with said circuit to produce a signal for each pulse, said signals being intermittent so long as the solenoid continues to cycle but become continuous when such cycling is interrupted as by a strike or by fouling of the lure. Electrical connector sockets are mounted on the case and are connected to the battery to supply charging current thereto. These sockets also accept the plugs of a flourescent lamp circuit. Mounting means are provided on the case for removably receiving interfitting means on the base of the staff of the lamp which is thereby positioned so as to illuminate the fishing area. Means are also provided for holding the case in place on the seat of a boat or other suitable support. By varying both the length of travel of the pole tip and the time between the power strokes thereof, a large number of different cycle patterns are available to permit the selection of the pattern which produces the most effective action of the particular lure which is being used.

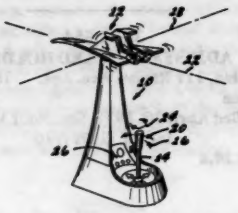
3,691,669

TOY FLIGHT SIMULATOR AND DISPLAY STAND

Henry J. Folson, Redondo Beach; Daniel R. Lucas, Jr., Orange; William A. Staats, Torrance, and James I. Tucker, Jr., Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 20, 1971, Ser. No. 108,113
Int. Cl. A63h 33/00
U.S. Cl. 46—1 H 11 Claims

A simulator-display stand, including a control stick and linkage to simulate flight movement with a toy airplane. The linkage includes five elements, two of which includes integral living hinges for transmitting motion of the control stick to parallel motion of the airplane in an easily manipulated, inexpensive and exciting fashion.

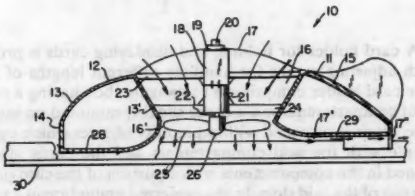


3,691,670

TOY VEHILCE AND TRACK

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 11,562, Feb. 16, 1970, Pat. No. 3,611,622. This application Oct. 12, 1971, Ser. No. 188,311
Int. Cl. A63h 30/06
U.S. Cl. 46—1 J 10 Claims



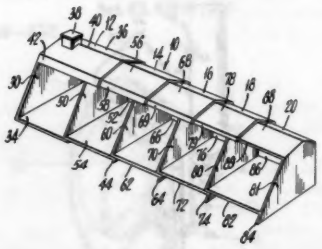
A toy vehicle and track therefore are provided in which the vehicle is suspended on a layer of air disposed between the track and vehicle. In one form the vehicle contains own power supply and fan for generating flow of air therethrough and propelling same downwardly and readwardly to both float the vehicle on the track and propell it therealong. In another form, air is pressurized remote from the vehicle and fed to the vehicle through a duct which may comprise the track itself or a flexible line extending to the vehicle.

3,691,671

EXPANDABLE DOLL HOUSE

Frederick H. Kroll, 72 Wood Hollow Lane, New Rochelle, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,230
Int. Cl. A63h 33/00
U.S. Cl. 46—12 4 Claims



A multi-room expandable and contractible doll house includes a plurality of slideably telescoping room-defining sections movable between contracted nesting and extended end-

to-end positions. Each section includes a roof formed of upwardly converging top panels, a floor panel, a rear panel and an inner end panel, corresponding longitudinal panels of adjacent sections being slideably engageable. At least one longitudinal slot is formed in each rear wall and a headed pin is fixed proximate the inner edge of each rear wall and engages the slot in an adjacent wall to limit the outward movement of the sections to slightly overlapping end-to-end positions. The outer edge of each section is provided with a depending flange which terminate at a common level.

3,691,672

BUILDING STRUCTURES AND METHOD

William G. Pendill, 124 E. 16th St., Hinsdale, Ill.

Continuation of Ser. No. 806,623, March 12, 1967, abandoned. This application July 30, 1971, Ser. No. 167,843

Int. Cl. A63h *33/00*

U.S. Cl. 46—16 **5 Claims**

Building units for use with sand and other pulverulent material are provided which comprise shaped complemental edifices that are hollow and have top and bottom openings with a connecting passageway so that these edifices acan be assembled on a beach or other surface and filled through the top opening with sand or other pulverulent material and can be disassembled simply by lifting them so that the sand or other pulverulent material folws out from the bottom openings.

3,691,673

TOY TOPS

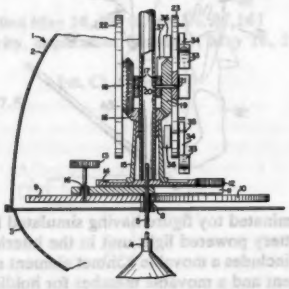
Peter Balleis, Zirndorf, near Nurnberg, Germany

Filed March 3, 1970, Ser. No. 16,076

Claims priority, application Germany, March 12, 1969, P 19 12 512.3

Int. Cl. A63h *1/06*

U.S. Cl. 46—68 **4 Claims**



A toy top having a top body in which is mounted a carrier member for rotation about the top body axis by means of a transmission gear operatively coupled to the top body, the top body being rotatable by a spin-imparting rod. A first bevel gear carried by the carrier member meshes with at least one second bevel gear rotatable about an axis extending radially of the top body axis. Various figures or figure carriers for example a perpetual motion machine according to Wilars, may be coupled for rotation with the second bevel gear.

3,691,674

AERIAL TWISTER TOY AND CATAPULT THEREFOR

James E. Thompson, 452 Bartlett, 202, San Francisco, Calif.

Filed Oct. 21, 1970, Ser. No. 82,680

Int. Cl. A63h *27/00, 27/14*

U.S. Cl. 46—74 R **14 Claims**

A toy which is adapted to be used as a projectile to be catapulted vertically into the air. This toy is provided with a body that is elongated and shaped so that when it reaches the peak of its climb it assumes a horizontal position and starts to rotate around its long axis. This rotation continues during descent and slows the speed of descent making it possible to catch the toy by hand.

3,691,675

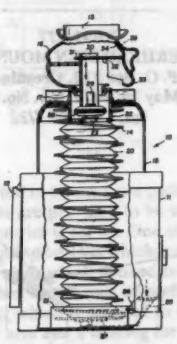
JACK-IN-THE-BOX SOUNDER

James A. Rodgers, Hamburg, N.Y., assignor to The Quaker Oats Company

Filed March 1, 1971, Ser. No. 119,653

Int. Cl. A63h *13/16*

U.S. Cl. 46—118 **8 Claims**



A jack-in-the-box is equipped with a bellows extending between the pop-up figure and the box so that the bellows is compressed when the figure is pushed into the box and ex-

panded when the figure pops up. An air-operated sounder is arranged in a passageway from inside the bellows to outside the bellows for making a sound when air moves through the passageway. The passageway includes an expandible sleeve arranged for moving a feature of the pop-up figure, and a lever at the bottom of the bellows can be manually operated for compressing the bellows to operate the sounder.

3,691,676

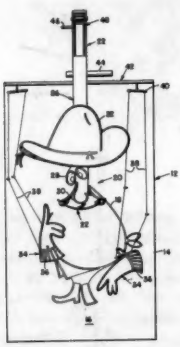
ANIMATED TWO-DIMENSIONAL FIGURE

Stephen Mellow, 6430 Sunset Blvd., Los Angeles, Calif.

Filed Dec. 30, 1970, Ser. No. 102,744

Int. Cl. A63h 7/00

U.S. Cl. 46—126 **27 Claims**



An animated two-dimensional character defined by a fixed outline applied to a flat board and a plurality of movable character features positioned on top of the outline and movable with respect to it. Some of the features are mounted to a first bar that is loosely secured to the board and centered in an original position with respect to the outline while others of the features are mounted to a second member such as an independently movable second bar placed on top of the first bar and also centered with respect to the outline. The bars are substantially universally movable in the vicinity of the outline, the features thereon define portions of the character such as facial features, hands or pieces of clothing and some of the features can be further movable with respect to the mounting bars of the stationary operations of such features, say the closing or opening of the character's mouth or eyelids and, simultaneously therewith or independently thereof, for repositioning of the features with respect to the outline to change the overall appearance of the character and thereby cause animation of individual character features as well as of the overall character figure.

3,691,677

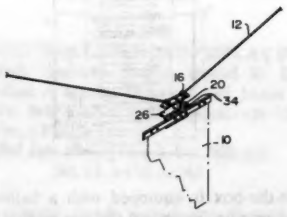
OVERHEAD SIGN MOUNTING

Walklett Blaising, P. O. Box 111, Crestline, Ohio

Filed May 26, 1971, Ser. No. 146,924

Int. Cl. G09f 7/22

U.S. Cl. 40—128 **4 Claims**



Apparatus adapted to be secured to a pole or cable for supporting a vertical sign in any desired angular position about its vertical axis and for detachably locking same in said position.

3,691,678

Patent Not Issued For This Number

3,691,679

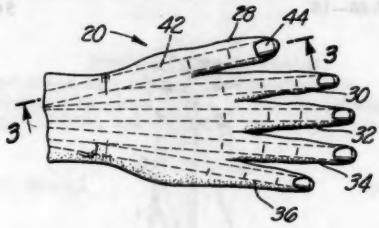
GROWING DOLL FINGERNAILS

Daniel D. Kersten, 984 Chestnut, Esconido, Calif.

Substitute for Ser. No. 545,096, April 25, 1966, abandoned. This application Dec. 14, 1970, Ser. No. 98,001

Int. Cl. A63h 3/36

U.S. Cl. 46—163 **4 Claims**



This invention is directed to a toy doll structure which has simulated fingernails. The fingernails appear at the end of the doll's fingers in a fashion very similar to real, growing human fingernails. When desired, the fingernail can be pulled out a length and cut off to simulate the growth of the fingernail. Furthermore, if a new polish area is desired, the fingernail material can be pulled out in an entire fingernail length, cut off and repainted with fingernail polish.

3,691,680

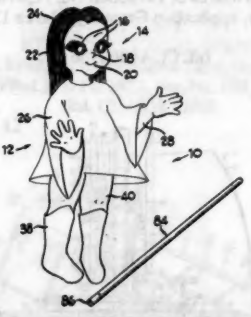
ILLUMINATED FIGURE TOY

Marvin I. Glass; Allison W. Katzman, both of Chicago, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, a partnership

Filed Dec. 30, 1971, Ser. No. 214,081

Int. Cl. A63h 3/26

U.S. Cl. 46—228 **7 Claims**



An illuminated toy figure having simulated human features with a battery powered light unit in the interior thereof. The light unit includes a movable contact element and a fixed contact element and a movable member for holding the movable contact element away from the fixed element when the figure is in a reclining position but permitting the circuit to close with the two contact elements in engagement when the figure is in an upright position. The movable contact element has a magnetically attracted portion and the figure is provided with a

magnetic element, which when placed near the movable contact, draws it out of engagement with the fixed contact to open the electrical circuit, even when a figure is in an upright position.

3,691,681

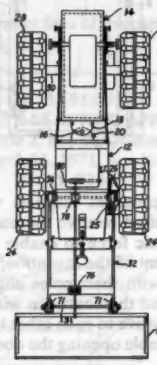
REMOTELY OPERATED EARTH MOVING TOY

Robert A. Gagnon, Star Route 2, Box 944, Trail, Oreg.

Filed Oct. 14, 1971, Ser. No. 189,145

Int. Cl. A63h *33/26*

U.S. Cl. 46—244 A **10 Claims**



A mechanical toy is provided, electrically operated by remote control, for scooping up sand or other finely divided material, transporting it to a desired destination, and there depositing it. The toy includes several reversible motors, all driven from a common source of power, all controlled through associated switches which form parts of a single control unit, and all concerned with the steering and driving of a vehicle, and/or the scooping up, the transportation of, and the depositing at a desired destination, of sand or like material through the informed manipulation of the switches.

3,691,682

Patent Not Issued For This Number

3,691,683

METHOD FOR THE CHEMICAL TREATMENT OF LIVING TREES AND INJECTION CARTRIDGE FOR THE PERFORMANCE OF THE AFORESAID METHOD

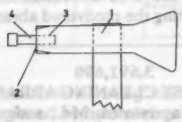
Harry Klaus Sterzik, Am Enterbusch 25, Hannover, Munden, Germany

Filed May 14, 1970, Ser. No. 37,161

Claims priority, application Germany, May 16, 1969, P 19 25 454.7

Int. Cl. A01g *7/06*

U.S. Cl. 47—57.5 **1 Claim**



A method for the chemical treatment of living trees is disclosed wherein a chemical agent is injected into the tree in that a cartridge which is at least partially filled with the chemical treating agent is knocked into the tree trunk. The cartridge is ruptured at its end penetrating into the tree by virtue of the impact and there is generated within the cartridge an overpressure which injects the chemical treating agent into the trunk of the tree.

There is also disclosed an injection cartridge for carrying out the aforedescribed method which comprises a sleeve member which at least partially contains or is filled with the chemical treating agent, and wherein the end of the sleeve member destined to be knocked into the tree trunk supports a closure member which is destructible under the impact force.

3,691,684

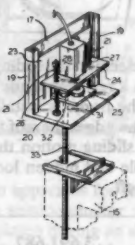
WINDOW POWER ACTUATING DEVICE

Roger L. Boneck, W-140, N-5550 Lilly Road, Menomonee Falls, Wis.

Filed Oct. 19, 1970, Ser. No. 81,929

Int. Cl. E05f *15/20*

U.S. Cl. 49—21 **3 Claims**



This invention provides a power actuation device for raising and lowering a window in a building. A safety switch prevents the window from shutting tightly if an object obstructs or limits window travel. Also a moisture sensor shuts the window if it rains.

3,691,685

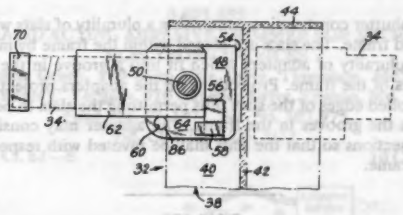
PARKING BARRIER HARDWARE

Alex Danin, 1080 Mamaroneck Ave., White Plains, N.Y.

Continuation-in-part of Ser. No. 6,762, Jan. 29, 1970, Pat. No. 3,616,574. This application April 16, 1971, Ser. No. 134,628

Int. Cl. E01f *13/00*

U.S. Cl. 49—35 **7 Claims**



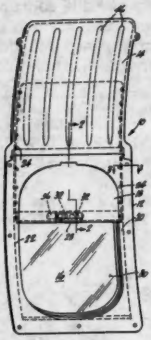
Components adapted to be used in a parking barrier. A pair of prefabricated units are provided to be used at the parking lot when a parking barrier is set up. One of the prefabricated units includes a mounting bracket which is adapted to be fixed to a standard and a shaft which is fixed to and extends from the bracket. The other of the pair of prefabricated units includes an arm carrier which is adapted to be connected with an elongated barrier arm and a bearing for mounting the arm carrier swingably on the shaft. Thus, these prefabricated units can be assembled at a parking lot with a standard fixed to and extending upwardly from the ground and with an elongated barrier arm to complete the parking barrier.

3,691,686

WINDOW SHADE ASSEMBLY

Dennis J. Donegan, Lakewood, Calif., assignor to McDonnell Douglas Corporation

Filed March 30, 1971, Ser. No. 129,382
Int. Cl. E06b 3/44
U.S. Cl. 49—56 6 Claims



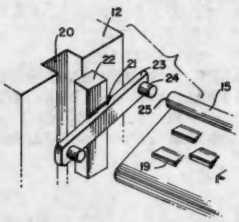
A window shade assembly including a curved shade frame and shroud in which a resilient shade having a curvature differing from that of the frame is installed. The shade has frictional means along the edges thereof to engage the frame and to enable restricted sliding motion therebetween. The shade also includes a handle and hidden locking means therefor to discourage handle theft.

3,691,687

SHUTTER CONSTRUCTION

Hercules Economou, 812 N.W. 8th Ave., Fort Lauderdale, Fla.

Filed Aug. 6, 1971, Ser. No. 169,682
Int. Cl. E05f 17/00; E06b 7/082, 7/084
U.S. Cl. 49—74 9 Claims



A shutter construction comprising a plurality of slats within a rigid frame. The slats are placed within the frame by means of a plurality of adapters which fit into a groove in the side pieces of the frame. Projections on the adapters project into the rolled edges of the slats thus permitting the slats to be slid down the grooves in the frame. The adapter may consist of two sections so that the slats may be pivoted with respect to the frame.

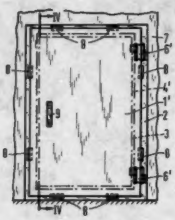
3,691,688

DOOR ASSEMBLY FOR AN ENCLOSURE HAVING A TIGHT SHIELDING FOR HIGH FREQUENCY EMISSIONS

Hans-Peter Kaiserswerth, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 3, 1971, Ser. No. 120,469
Claims priority, application Germany, March 5, 1970, P 20 10 516.2
Int. Cl. E05d 65/06
U.S. Cl. 49—394 11 Claims

A door assembly having a casing member surrounding a door opening, a door mounted on the casing member for closing the opening with electrical sealing means disposed therebetween. The improvement is the provision of magnetic means for clamping the door and casing against the electrical sealing means to insure a minimum transitional resistance therebetween. In one embodiment of the invention, the magnets are electromagnets which require deenergizing to enable opening of the door. Another embodiment of the invention,



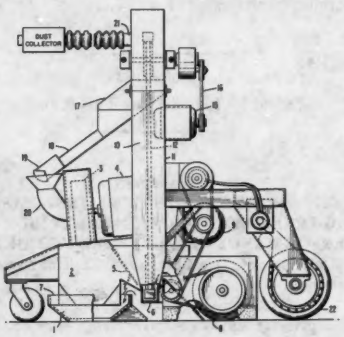
the magnets are permanent magnets with associated pole pieces which are shifted relative thereto to reduce the magnitude of the magnetic force to enable opening of the door. The third embodiment of the invention, is a provision of two groups of magnets with their poles aligned with or without pole pieces interposed therebetween with the groups of magnets being moved relative to each other to enable reducing the magnetic force to enable opening the door.

3,691,689

ABRASIVE SURFACE CLEANING APPARATUS

James R. Goff, Mishawaka, Ind., assignor to Robert T. Nelson, Oklahoma City, Okla.

Filed Feb. 4, 1971, Ser. No. 112,543
Int. Cl. B24c 3/00
U.S. Cl. 51—9 6 Claims



A novel, mobile, continuously operable abrasive surface cleaning apparatus utilizing a rotating brush for abrasive recovery is disclosed. Also, a novel continuous belt elevator or conveyor for recirculating the recovered abrasive is disclosed.

3,691,690

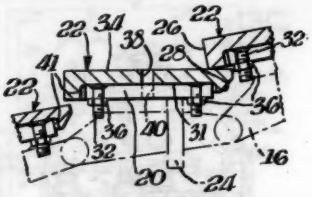
ABRASIVE BLAST CLEANING ARRANGEMENT

Willard J. Harper, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,328
Int. Cl. B24c 9/00; B24b 31/10
U.S. Cl. 51—13 6 Claims

An abrasive blast cleaning arrangement includes a slat conveyor wherein each individual slat has a removable channel

shaped cap thereon. The cap and slat are secured together by



studs welded to the inner face of the cap so as not to protrude through its wear face.

3,691,691

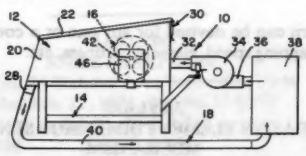
ABRASIVE BLASTING APPARATUS

Phillip W. Smith, Route 2, Box 264, Gibsonville, N.C.

Filed March 16, 1971, Ser. No. 124,810

Int. Cl. B24c *3/20*

U.S. Cl. 51—15 **7 Claims**



Apparatus for blasting with an abrasive meter components including a driven carrier rotatably mounted within a housing adjacent a nozzle. The carrier includes a plurality of supporting arrangements, one for each meter component, for resiliently clamping the components such that the meter faces are protected from the abrasive blast.

3,691,692

APPARATUS FOR CONTINUOUSLY CLEANING THE SURFACE OF ELONGATED STOCK

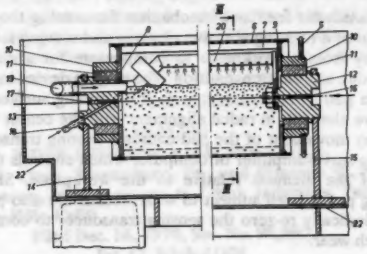
Harald Strohmeier, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. A.G., Kapfenberg, Austria

Filed Feb. 8, 1971, Ser. No. 113,251

Claims priority, application Austria, Feb. 13, 1970, A 1300/70

Int. Cl. B24b *31/02*

U.S. Cl. 51—20 **5 Claims**



A body of particulate scouring material is provided in a chamber and is agitated in the chamber. Elongated stock to be cleaned is pulled through the scouring agent in the chamber while the scouring agent is agitated to abrade particles from the stock. A liquid is continuously applied to the scouring agent to entrain the abraded particles in the liquid. The liquid with the abraded particles entrained thereby is withdrawn from said chamber.

3,691,693

Patent Not Issued For This Number

3,691,694

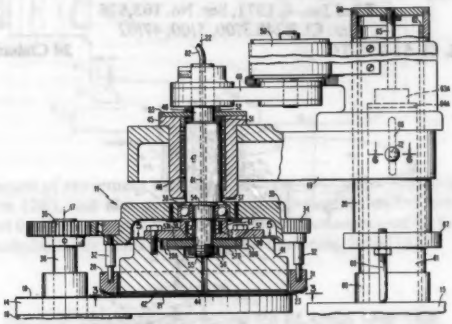
WAFER POLISHING MACHINE

Frederick E. Goetz, Wappingers Falls, and James R. Hause, La Grangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,999

Int. Cl. B24b *7/00, 9/00, 29/00*

U.S. Cl. 51—80 **14 Claims**



This patent relates to apparatus for removing and polishing opposite surfaces of a semiconductor wafer. The apparatus comprises a rotatable platen having an abrasive upper surface upon which a mask having suitable apertures therein for receiving wafers is positioned. A hoop is connected to the mask for imparting rotation thereof separately from the rotation of the platen. Overlying the mask and wafers is a second lapping means having an abrasive surface thereon for applying a uniform pressure upon the opposite surface of the wafer. Separate drive means cooperate with the second lapping means for separately driving the lapping means os that upon rotation of the platen, hoop and mask, and second lapping means the opposite planar surfaces of the wafer is brought into coplanarity while being polished. During the operation of the apparatus the surface of the wafers is continuously wetted with an excess quantity of a displacement plating solution containing, for example, a cupric or silver nitrate and a fluoride anion, the solution being maintained preferably at a pH of less than 7.

3,691,695

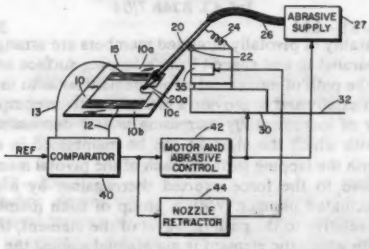
RAPID ACTING ABRASIVE TRIMMER FOR MICRO-ELECTRONIC DEVICES

Norman Green, 119 Deep Dale Drive, Timonium, Md., and William C. Vergara, 910 Dunellen Drive, Towson, Md.

Filed Jan. 20, 1971, Ser. No. 107,975

Int. Cl. B24c *3/06, 3/32*

U.S. Cl. 51—8 **10 Claims**



An abrasive trimmer for micro-electronic devices includes a nozzle for directing abrasive at a micro-electronic device to be

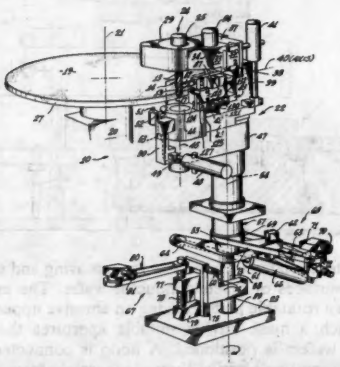
trimmed. The nozzle is pivot mounted and spring biased into a first, normally operative position. A circuit which senses the electrical characteristics of the micro-electronic device being trimmed generates a signal when predetermined characteristics are sensed. This signal activates a solenoid winding which pivots the nozzle against its spring bias into a second retracted position.

3,691,696

APPARATUS FOR MACHINING CUTTER TEETH

Ralph D. Adams, Escondido, and Efrain D. Lopez, Pasadena, both of Calif., assignors to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

Filed Jan. 4, 1971, Ser. No. 103,626
Int. Cl. B24b *3/00, 5/00, 47/02*
U.S. Cl. 51—95 TG **24 Claims**



A machine for grinding the surfaces of helical teeth on a cutter, and having means for positioning a cutter alongside a grinding wheel and moving the cutter axially relative to the wheel while turning the cutter at a rate directly related to the spiral of the tooth about the cutter, thereby to present the full length of the tooth to the grinding wheel in a smooth, continuous motion. A movable tooth rest is pressed against one side of the tooth to be deflected laterally in response to the force developed between the tooth and the tooth rest, and deflection of the tooth rest operates a control valve for variably rotating the cutter. The motor is driven by a flow of fluid regulated by the control valve, and leakage that could create a pressure drop across the motor is made by an adjustable compensating valve. Fine adjustments are provided for correlating the deflection of the tooth rest with the resulting rates of cutter rotation.

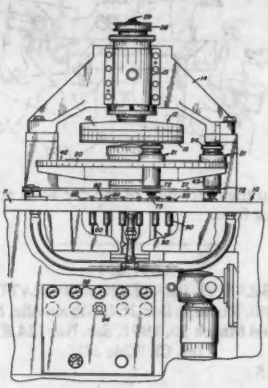
3,691,697

PRESSURE CONTROL FOR LAPPING DEVICE

David L. Bender, West Henrietta, N.Y., assignor to Hamco Machine & Electronics Corp., Rochester, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,978
Int. Cl. B24b *7/04*
U.S. Cl. 51—134 **3 Claims**

A plurality of pivotally mounted members are arranged in a plane parallel to and spaced from a lapping surface and relative to the path of movement of an element so as to move the element axially and to provide a pressure pattern comprising a number of incrementally increasing and/or decreasing pressures with which the element can be maintained in engagement with the lapping surface. Each of the pivotal members is responsive to the force exerted thereagainst by a gas- or liquid-actuated plunger. With a group of such members arranged relative to the path of travel of the element, the pressure with which the element is maintained against the lapping surface can be varied to increase uniformly from one end to the other, to decrease uniformly from one end to the other, or to provide a number of variable pressures throughout the path of travel during the lapping operation. In other words, a pressure pattern can be devised for any one or a combination of material, lapping speed, element hardness, etc.

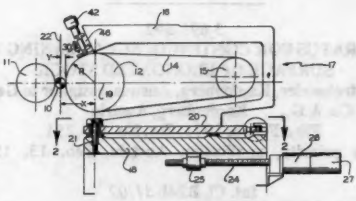


3,691,698

ABRASIVE ELEMENT DIMENSION SENSING MECHANISM

Robert L. Schaller, Syracuse, N.Y., assignor to Sundstrand-Engelberg, Inc., Liverpool, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,636
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.88 **11 Claims**



A transducer feedback mechanism for sensing the precise position of a rotating abrasive element and moving it towards or away from a workpiece to compensate for a change in radius due to wear or expansion. The sensing device includes a carbide pad in engagement with the grinding surface of the abrasive element, in radial alignment with the center thereof, and any movement of the pad causes a sensing transducer to signal a servo-amplifier or computer which controls the position of the element relative to the workpiece. Since the sensing pad is itself subject to wear, means are also provided to periodically re-zero the sensing transducer to compensate for such wear.

3,691,699

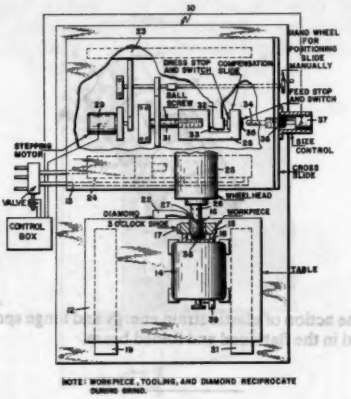
GRINDING MACHINE

Herbert R. Uhtenwoldt, Worcester, Mass., assignor to The Heald Machine Company, Worcester, Mass.

Filed July 9, 1970, Ser. No. 53,491
Int. Cl. B24b *49/16*
U.S. Cl. 51—165.92 **6 Claims**

This invention relates to a grinding machine having means

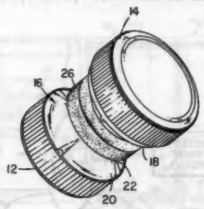
for assuring that the spindle deflection is the same during the



NOTE: WORKPIECE, TOOLING, AND DIAMOND RECIPROCATE DURING DRESS.

critical portions of successive grinding cycles, irrespective of variations in workpiece size.

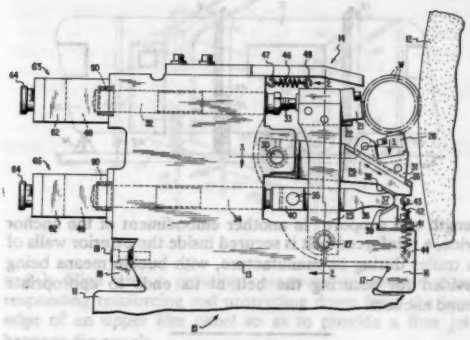
3,691,700
KNIFE SHARPENER
Robert M. Hayes, 24 Webster Ave., Somerville, Mass.
Filed Feb. 11, 1971, Ser. No. 114,578
Int. Cl. B24b *3/54*
U.S. Cl. 51—210 **5 Claims**



Knife sharpener comprising a pair of rolling supports providing knife blade guide surfaces of generally frusto-conical form spaced along an axis, an abrasive mounted between the supports and having blade sharpening surfaces respectively facing and making acute angles with the guide surfaces, and risers extending between the guide surfaces and the sharpening surfaces, the risers making angles with the sharpening surfaces larger than the acute angles, at least one of the guide surfaces departing from the frusto-conical form at protuberances spaced angularly from each other with respect to the axis, the protuberances merging into the frusto-conical form.

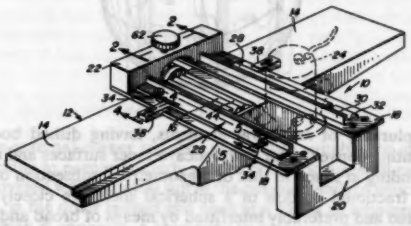
3,691,701
WORK REST FOR A MACHINE TOOL
Wilbur R. Clark, Waynesboro, Pa., and Freeman W. Mann, Hagerstown, Md., assignors to Litton Industries, Inc., Beverly Hills, Calif.
Filed Dec. 16, 1970, Ser. No. 98,803
Int. Cl. B24b *41/06*
U.S. Cl. 51—238 S **9 Claims**

A work rest (**14**) for a machine tool, such as a grinding machine (**10**), includes pivotally mounted upper and lower work supporting arms or jaws (**22** and **29**) to provide a rigid support for a workpiece (W). The jaws (**22** and **29**) are movable about their pivot points in order to provide a range of movement for a desired diameter range of the workpiece (W). The position of the lower jaw (**29**) is advanced by a wedge or spreader (**36**) which acts between a sloping surface (**38**) on the lower jaw (**29**) and a second sloping surface (**39**) on the base member (**16**) which is secured to a machine tool carriage (**11**). This arrangement provides a substantially identical



amount of movement between a plunger (**34**) and a work rest shoe (**28**), and also provides a metal-to-metal, positive support for the lower jaw (**29**) to prevent deflection caused by the resultant forces of the machine tool or grinding wheel (**12**).

3,691,702
JIG FOR SHARPENING JOINTER BLADES AND THE LIKE
Howard J. Smith, 1212 N. Delaware Ave., and Byron F. Smith, 901 Pecon Drive, both of Roswell, N. Mex.
Filed Nov. 17, 1970, Ser. No. 90,326
Int. Cl. B24b *3/38*
U.S. Cl. 51—249 **6 Claims**



A jig mountable directly on a woodworking machine and incorporating guide means for reception and guiding of a blade grinding tool. The device includes an indexing collar permanently affixed to the cutterhead shaft and selectively locked into rotatably adjusted positions for a sequential alignment of the blades with the jig guided tool.

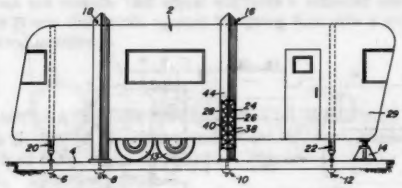
ERRATUM

For Class 51—206 see:
Patent No. 3,691,707

3,691,703
ANCHOR DEVICE FOR TRAILERS
Ray A. Barnes, 1057 Patricia, Cape Girardeau, Mo., assignor to Barnes Anchor Incorporated, Jackson, Mo.
Filed Oct. 23, 1970, Ser. No. 83,309
Int. Cl. E04b *7/00*
U.S. Cl. 52—23 **5 Claims**

An anchor device for securing trailers such as mobile homes, travel trailers, and the like or for securing other such vehicles to ground is disclosed. The anchor device consists of a multiple bar vertical support on each side of the trailer, abutting corresponding walls. The vertical support bars pass

over the roof of the trailer and are adjustably secured there, while the lower ends of the support bars are connected to suitable ground anchors. The multiple bar arrangement is generally triangular in cross-section so as to provide lateral



strength and support. In another embodiment of the anchor device, a reinforced belt is secured inside the exterior walls of the trailer during its manufacture, with buckle means being provided for securing the belt at its ends to appropriate ground anchors.

3,691,704

HOLLOW SPHERE AND STRUCTURAL ELEMENTS FOR CONSTRUCTING SAME

Phillip J. Novak, 3123 Lehman Ave., Salt Lake City, Utah

Filed May 19, 1970, Ser. No. 38,744

Int. Cl. E04b *1/32*

U.S. Cl. 52—80 **4 Claims**

A plurality of structural elements, having dished bodies presenting convex outer and concave inner surfaces and corresponding in shape to that of a geometrical subsection of an even fractional portion of a spherical shell, are closely associated and preferably interfitted by means of broad and flat tongues and corresponding recesses, that are spaced below such convex outer surfaces and preferably lie substantially wholly between the convex and concave surfaces, to form a hollow sphere. Both the tongues and recesses have mating nubs for interlocking the individual elements together when interfitted to form a sphere. The structural elements can either be positively secured to each other or left free for easy disassembly. The convex outer surfaces of various of these structural elements may be colored or otherwise treated differently to provide a patterned exterior surface for the sphere, and the mated contiguous edges of such structural elements may be joined, adhesively or otherwise.

3,691,705

SELF-ERECTING COLLAPSIBLE AND FOLDABLE TUBULAR BEAM

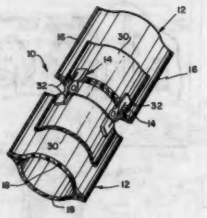
George R. Luckey, Playa Del Rey, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 24, 1971, Ser. No. 146,187

Int. Cl. F04h *12/18*

U.S. Cl. 52—108 **3 Claims**

A self-erecting collapsible and foldable articulated tubular beam having a pair of thin-walled resiliently flexible tubes joined end to end by spring loaded hinges in a manner such that the beam may be flattened and then folded to locate the flattened tubes in side by side relation, and the beam, when released, springs back to its normal expanded configuration



under the action of elastic strain energy and hinge spring energy stored in the flattened and folded beam.

3,691,706

Patent Not Issued For This Number

3,691,707

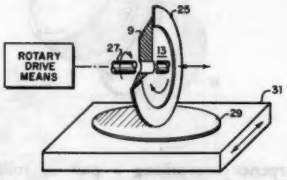
SEMICONDUCTOR MATERIAL CUTTING APPARATUS AND METHOD OF MAKING THE SAME

Henry R. Von Arx, Palo Alto, and Karl J. Zueger, San Rafael, both of Calif., assignors to Sola Basic Industries

Filed Nov. 12, 1969, Ser. No. 876,000

Int. Cl. B24d *5/00, 11/10, 17/00*

U.S. Cl. 51—206 **4 Claims**



Improved rotary cutting apparatus and method of making the same incorporates a thin deposited layer of diamond particles in nickel disposed about the periphery of a rotatably body. The deposited layer is exposed beyond the periphery of the body during the fabrication process to provide high-speed cutting apparatus for use on semiconductor materials.

3,691,708

WATERTIGHT SEAL CONNECTION FOR PREFABRICATED BUILDING PANEL SEAMS

Sepp Firnkas, Boston, Mass., assignor to Omniform Incorporated, Hartford, Conn.

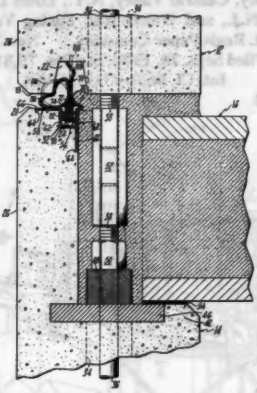
Filed April 15, 1970, Ser. No. 28,692

Int. Cl. E04c *3/26*; E04b *1/66*

U.S. Cl. 52—228 **4 Claims**

A fluidtight seal connection for a pair of precast concrete structural panels having opposed recesses on their confronting surfaces includes an elongated locking channel disposed within one of the confronting recesses and a pliable one-piece sealing strip supportably retained within the locking channel for cooperative sealing action with the confronting recess. The elongated sealing strip includes a triangular central body portion traversing the opening of the channel, a flexible and deformable tubular fluid barrier integral with the central body

portion for deformably sealing the joint between the panels and an anchoring member depending from the central body



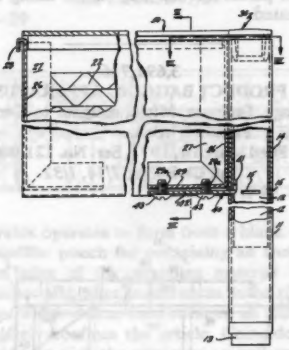
portion of the strip and extending into the channel for lockable retention of the strip therein.

3,691,709

MODULAR PARTITION SYSTEM

Jan Nathan Ostborg, Michigan City, Ind., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed April 17, 1970, Ser. No. 29,619
Int. Cl. E04b *2/78, 2/82*
U.S. Cl. 52—239 6 Claims



A panel having a hook extending outwardly from the top thereof and a foot extending inwardly along its bottom. The hook is fitted over the top of a supporting post and is automatically centered thereon, which in turn centers the panel. The supporting post includes a slot near its bottom into which the base of a clip located at the bottom of the panel is fitted. The top edge of the panel includes a longitudinal slot which accommodates the downwardly depending tongue of a decorative top extrusion. This slot is also adapted to accommodate hangers for hanging cabinets or supporting other similar structures.

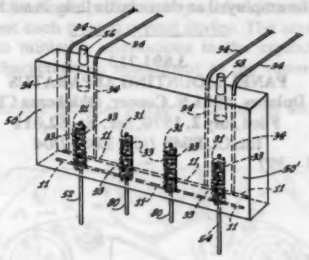
3,691,710

BUILDING PANELS

A. Carlton Gilbert, 1450 S. 24th St., Phoenix, Ariz., and John K. Parsons, 1528 E. Missouri, Phoenix, Ariz.

Continuation-in-part of Ser. No. 748,243, July 29, 1968, abandoned. This application Dec. 22, 1969, Ser. No. 887,248
Int. Cl. E04b *5/32, 1/41*
U.S. Cl. 52—251 6 Claims

An improved building panel is provided composed, for example, of pre-cast concrete, and which includes a plurality of internal reinforcing rods, including several protruding from its edges, and one or more metallic sleeves protruding from its upper edge. Each of the sleeves has a truncated conical shape



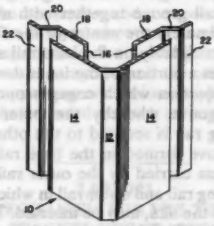
and is filled with a grouting compound to receive a corresponding reinforcing rod protruding down from the lower edge of an upper like panel so as to provide a firm joint between the panels.

3,691,711

EXTERNAL CORNER MEMBER

William E. Lowery, Orinda, Calif., assignor to Control Building Systems, Inc.

Filed April 30, 1971, Ser. No. 139,056
Int. Cl. E04b *2/60*
U.S. Cl. 52—282 5 Claims



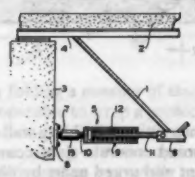
An external corner member of the type suitable for use in attaching to perpendicularly spaced prefabricated wall panels is provided with a central run at the opposite ends of which extend, in the order recited and each at a 45° to an adjacent run to which it connects, a long run, an inner run, a connecting run, a short run, and an abutment run. Fastening means join portions of the wall panels to the external corner member.

3,691,712

DAMPING SYSTEM

George W. Bowling, Olivette; Peter J. Conlisk, Creve Coeur, both of Mo., and Kenneth H. Lenzen, Lawrence, Kans., assignors to Monsanto Company, St. Louis, Mo.

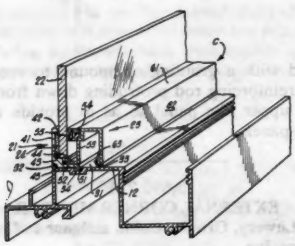
Filed May 13, 1969, Ser. No. 824,131
Int. Cl. E04b *1/98*
U.S. Cl. 52—393 19 Claims



A method of damping vibrations in building structures by linking an end of a beam to a fixed support by viscoelastic

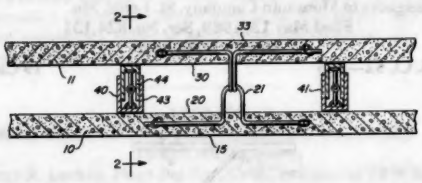
links or damping elements spaced away from the neutral plane of the beam and comprising linking structural members with a viscoelastic damping material sandwiched between and bonded to the structural members, and the damping elements which can be employed as viscoelastic links in such a method.

3,691,713
PANEL MOUNTING APPARATUS
Thomas J. Dulaney, 4901 N. Cooper, Oklahoma City, Okla.
Filed July 2, 1970, Ser. No. 52,011
Int. Cl. E04b *1/62*; E06b *1/04*
U.S. Cl. 52—397 10 Claims



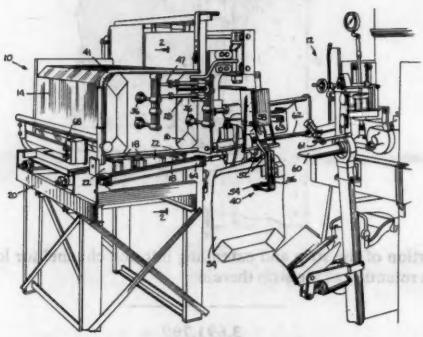
Apparatus for mounting panels, such as windowpanes and the like for either inner or outer glazing. One form of the apparatus may comprise a base rail having formed therein a relatively wide dovetail groove together with a second dovetail groove in approximately the center of the first such groove. An outer rail seats slidably on the base rail and has a projection which engages a portion of the inner dovetail groove and an additional projection which engages one element of the outer dovetail groove whereby the outer rail is secured thereto. A glazing rail is secured to the other portion of the first dovetail groove formed in the base rail and is likewise secured in a recess carried by the outer rail. A space is left between the glazing rail and outer rail in which panels, such as window glass and the like, may be inserted. The securing portions of the glazing rail and the outer rail are fashioned so that they may be reversed in their relationship to the base rail should conditions warrant.

3,691,714
METHOD FOR CONSTRUCTING A BUILDING WALL
Benjamin D. Stepp, 315 W. 11th St., Casa Grande, Ariz.
Filed June 22, 1970, Ser. No. 48,318
Int. Cl. E04b *2/40*
U.S. Cl. 52—743 3 Claims



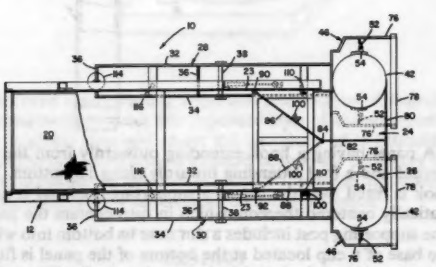
A method for constructing a building wall utilizing a pair of spaced-apart reinforced concrete slabs connected by a hook and eye arrangement and urged apart by dividers which also form temporary forms to permit concrete to be poured therebetween, thereby providing spaced columns between the slabs.

3,691,715
VALVE BAG APPLICATOR MACHINE
Robert G. Kelly, Central Valley, N.Y.; Louis L. Legg, Woodcliff Lake, N.J., and Walter Ruf, Spring Valley, N.Y., assignors to St. Regis Paper Company, New York, N.Y.
Filed Sept. 28, 1970, Ser. No. 75,811
Int. Cl. B65b *43/30*, *57/04*
U.S. Cl. 53—3 15 Claims



This invention relates to a bag filling machine which strips bags one at a time from a magazine feeder, opens the bag valve and places the bag on the filling tube of a valve bag packaging unit. Proper placement of the bag on the filling tube automatically starts the filling phase, and after the bag is filled it is discharged from the packaging unit. The valve bag applicator then places another bag on the filling tube and the cycle is repeated.

3,691,716
PRODUCT BAGGING APPARATUS
Daniel A. Fogg, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.
Filed March 4, 1971, Ser. No. 121,088
Int. Cl. B65b *57/14*, *1/32*
U.S. Cl. 53—59 W 8 Claims

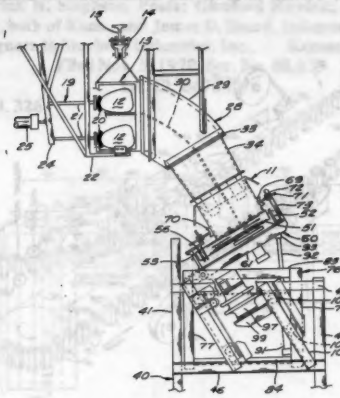


Apparatus and a method for filling a bag with a product, such as vegetables or the like. The product is moved into the bag when its upper end is held open. The movement of the product to the bag will be stopped automatically after the weight of the bag reaches a predetermined value. A pivotally mounted platform supports the bag as it is being filled.

3,691,717
METHOD AND APPARATUS FOR FILLING CARTONS
Michael S. Pirro, Crystal Lake, Ill., assignor to Swift & Company, Chicago, Ill.
Filed Dec. 1, 1970, Ser. No. 94,011
Int. Cl. B65b *5/08*
U.S. Cl. 53—35 13 Claims

Cartons are positioned in a tilted attitude to receive a group

of items which are slid simultaneously, as a group, along arcu-



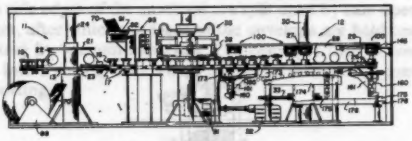
ate courses into the carton. The filled carton is then moved to a horizontal attitude and removed.

3,691,718

POUCH FORMING APPARATUS AND METHOD

George M. Woodruff, Farmington, Conn.; Donald Schoonmaker, Boonton, N.J.; David Daniels, Jacksonville, Fla., and Burton J. Waxler, Lima, Ohio, assignors to General Foods Corporation, White Plains, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,148
Int. Cl. B65b *11/02*
U.S. Cl. 53—29 19 Claims



This apparatus operates to form from a blank of wrapping material a circular pouch for containing an annular article. The opposed plies of the wrapping material are bonded together by inner and outer sealed areas in the shape of concentric circles which define therebetween an annular pocket which completely confines the article. Coincident with the sealing of said material, the apparatus punctures the center area of the pouch and slices through said wrapping material in a continuous cut around the periphery of the outer seal to trim away the edge portions of said blank.

3,691,719

Patent Not Issued For This Number

3,691,720

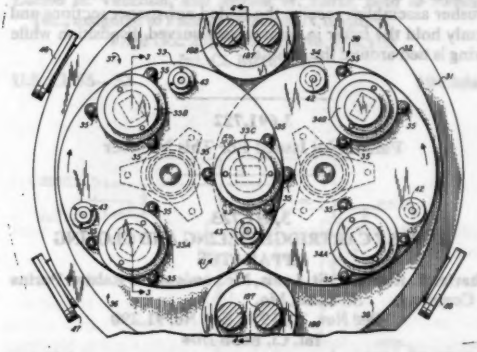
APPARATUS FOR FREQUENCY ADJUSTING AND ASSEMBLING MONOLITHIC CRYSTAL FILTERS

Albin R. Anderson, Lowell, and John D. Jennings, Andover, both of Mass., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,094
Int. Cl. B65b *31/02*
U.S. Cl. 53—91 15 Claims

Sealed piezoelectric crystal devices with desired frequency response characteristics are manufactured by treating and sealing each crystal in a vacuum environment within a common apparatus housing. Vapor deposition treatment is utilized, with treating material replenishing mechanisms being positioned within the vacuum environment in order to avoid disturbing the vacuum environment during replenishing operations. Sealing is performed by cold weld sealing a pair of covers about each treated crystal device. The arrangement is designed to minimize alternations in the crystal frequency response characteristics subsequent to the vapor deposition treatment.

The apparatus includes a pair of turntables which overlap



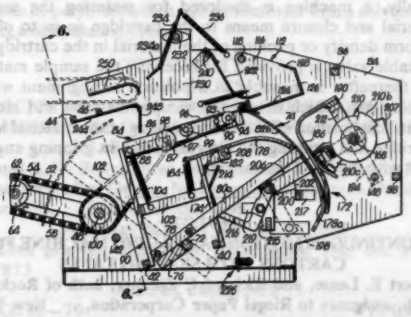
peripherally at a sealing station within the housing. A loading and unloading station, for introducing top covers and crystals into upper sealing dies and removing sealed crystal filter assemblies from the apparatus, and a vapor deposition crystal treating station are arrayed about one turntable. Manual and automatic loading stations for loading bottom covers into lower sealing dies are arrayed about the other turntable. Also included in the apparatus are various loading and unloading mechanisms and associated air-lock arrangements at the different stations.

3,691,721

FOLDING MECHANISM FOR MULTIPLE SECTION STACKED NEWSPAPERS

Warren W. Hannon, and Charles N. Hannon, both of Olathe, Kans., assignors to Warren W. Hannon, Olathe, Kans.

Filed April 30, 1971, Ser. No. 138,948
Int. Cl. B65b *63/04*
U.S. Cl. 53—120 20 Claims



Mechanism for folding a number of stacked newspaper sections in half and operable to wrap a protective sheet about the stacked sections during folding thereof if desired. The newspaper sections, along with the optional protective sheet thereunder, are delivered to a pivotally mounted support as a tucker blade is moved along a return path below the leading edges of the newspaper sections. A deflector bends the forward end of the protective sheet back over the newspaper sec-

tions. The tucker blade is then shifted along its folding path and initially picks up the trailing end of the protective sheet and folds it back over the newspaper section. Support structure for the tucker blade engages the trailing edges of the newspaper sections and moves the latter forwardly into a position with the leading edges thereof aligned and supported by a swingable carrier. The tucker blade moves downwardly between the support and the carrier as the latter swing relatively away from each other to fold the newspaper sections in half therebetween while holding the overlapped ends of the protective sheet and as the carrier swings out of the way as necessary to accommodate the folded sections. Spaced crusher assemblies receive the folded newspaper sections and firmly hold the latter in transversely curved disposition while string is tied around the bundle.

3,691,722

Patent Not Issued For This Number

3,691,723

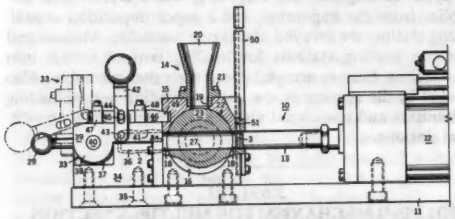
SAMPLE CARTRIDGE FILLING AND CLOSING APPARATUS

Charles K. Kummer, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 20, 1970, Ser. No. 91,290

Int. Cl. B65b *1/04*

U.S. Cl. 53—271 **3 Claims**



A sample cartridge is provided with interior lip and is adapted to receive a predetermined quantity of sample material and closure means therein. The lip being effective to grippingly engage the closure means so as to establish a fluid pressure seal therewith and prevent expansion or elastic return of the sample material contained in the cartridge. Additionally, a machine is disclosed for metering the sample material and closure means to the cartridge so as to obtain uniform density or packing of the material in the cartridge. A rotatable valve is provided for receiving the sample material and thereafter is movable to a position in alignment with a packing ram which moves the sample material and closure means to a position effecting the packing of the material in the cartridge and securing the closure means in gripping engagement with the lip of the cartridge.

3,691,724

CONTINUOUS MOTION PACKAGING MACHINE FOR CARTONS WITH SEALING TAPES

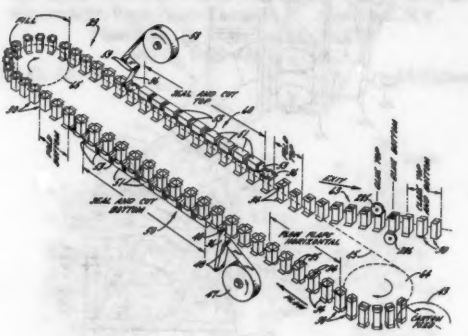
Robert F. Lense, and Richard C Zimmer, both of Rockford, Ill., assignors to Riegel Paper Corporation, New York, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,292

Int. Cl. B65b *1/00*

U.S. Cl. 53—284 **14 Claims**

A machine for filling upright cartons of generally rectangular cross-section with product after first applying sealing tapes to the lower ends of the cartons and before applying sealing tapes to the upper ends of the cartons. The machine incorporates several new and improved mechanisms for operating on the cartons and is particularly characterized by the novel mounting of certain ones of the mechanisms to enable the



machine to be changed over comparatively quickly and easily from running cartons of one size to running cartons of a different size.

3,691,725

PNEUMATIC MACHINE FOR THE LEAK-TIGHT CLOSURE OF FLASKS

Jean Cassimatis, Chemin des Plantiers, 04 Manosque, and Robert Vie, 49 ter, avenue St.-Jerome, 13 Aix en Provence, both of France

Filed April 19, 1971, Ser. No. 135,020

Claims priority, application France, April 24, 1970, 7015148

Int. Cl. B65b *7/28*; B67b *1/04*, *3/14*

U.S. Cl. 53—328 **2 Claims**

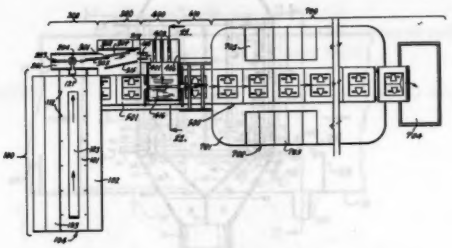
A skirted stopper is inserted into the neck of a flask within a shielded enclosure and the skirt is folded-back outside the neck to form a leak-tight seal by means of a machine comprising a flask receptacle surmounted by a hollow casing which contains a number of pistons in interfitting relation. Admission of compressed air into the casing by remote control means results in displacement of a main piston, a central plunger and a hammer rod which inserts the stopper; a separator piston provided with flexible extension strips projecting from the casing and surrounding the hammer rod is then displaced downwards to initiate reversal of the skirt; a releasing piston having flexible extension strips which surround the strips of the separator piston is then displaced downwards to complete reversal of the skirt which is applied against the neck, whereupon the pistons are returned upwards automatically and simultaneously by remote control of the compressed-air supply.

3,691,726

METHOD AND APPARATUS FOR OPENING ENVELOPES

Frederick N. Stephens, Paola; Glenford Rowlett, Prairie Village, both of Kans., and James D. Beard, Independence, Mo., assignors to Stephens Industries, Inc., Kansas City, Mo.

Filed Nov. 5, 1970, Ser. No. 88,039
Int. Cl. B67b 7/16
U.S. Cl. 326 12 Claims



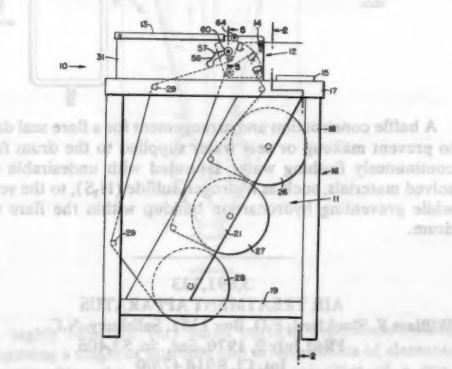
To continuously open envelopes of a preselected size, the process of jogging the contents to the bottom of the envelope, cutting off the tope edge, slitting both side edges, and then holding the faces of the envelope open to expose the contents thereof for manual removal. Apparatus employing the principles of the process include a feeder station onto which envelopes are initially placed for jogging the contents and for advancing the envelopes toward a pick-up station. The latter station individually grips, with a vacuum arm, an envelope on the feeder station and delivers it to a top edge cutting station where cutting wheels remove a portion of the envelope along the top edge. Next to the cutting station is a drop chute station that delivers the envelope to a V-shaped tray of a conveyor which then moves the envelope to an end slitting station where both side edges of the envelope are split open by cam operated blades, after which the faces of the envelope are held open in the tray by vacuum members. The conveyor then moves the tray into a sorting area where operators remove the contents for sorting.

3,691,727

MULTIPLE SHEET DISPENSING APPARATUS

Fritz Doerscheln, Rochester, N.Y., assignor to Heat Sealing Equipment Manufacturing Company, Cleveland, Ohio

Filed Feb. 14, 1966, Ser. No. 527,265
Int. Cl. B65b 67/00
U.S. Cl. 53—390 17 Claims



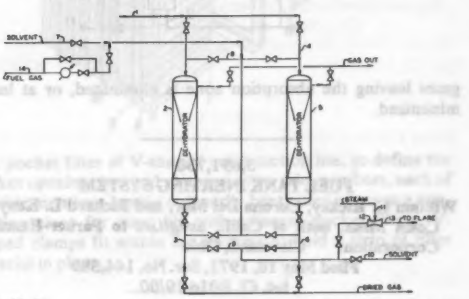
Several rolls of different width plastic sheet are mounted on a frame and each sheet is led to a dispenser holder that includes a sheet-support bar, a check means for holding each sheet to its respective bar, and a pair of plates supporting the bars and check means for pivotal motion transversely of the sheets. The pivotal dispenser allows any desired sheet to be moved into position adjacent a guide roll for dispensing and wrapping. The device also includes a wrapping table, a hot wire cutter, a hot plate sealer, and a tag holder on each bar for receiving and holding the tag end of a cut-off sheet.

3,691,728

REGENERATION PROCESS FOR SOLID DESICCANTS

Lucien H. Vautrain, and Russell W. Lortz, both of Sweeny, Tex., assignors to Phillips Petroleum Company

Filed Oct. 29, 1969, Ser. No. 872,198
Int. Cl. B01d 53/02
U.S. Cl. 55—33 10 Claims



A solid desiccant, used to dehydrate a gas, e.g., an ethylene-containing gas resulting from the pyrolytic conversion of a saturated hydrocarbon such as ethane or propane, is washed of deposited or polymeric material by passing a solvent, for example, an aromatic solvent such as benzene, toluene, or xylene, into the same, draining the solvent from the desiccant and reducing the pressure on the desiccant to cause evaporation of solvent which is removed whereupon the desiccant is heated to regenerate the same. In a modification a gas, e.g., a fuel gas, is passed through the bed, wet with solvent, to agitate the solvent in the bed to aid in the removal of the deposit or polymer therefrom. The desiccant can be an alumina or molecular sieve or other known desiccant which can be used to dehydrate any known vapor or gas which tends to form deposits or polymers which can be removed with a solvent following a dehydrating cycle.

3,691,729

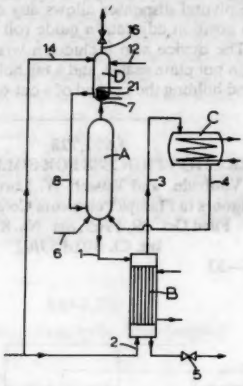
PROCESS AND APPARATUS FOR THE RECOVERY OF AMMONIA AND CARBON DIOXIDE FROM THE TAIL GAS OF A UREA SYNTHESIS

Michael A. De Rooy; Johan D. Logemann, and Henricus A. A. Koenders, all of Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed May 26, 1971, Ser. No. 147,055
Claims priority, application Netherlands, May 30, 1970, 7007873
Int. Cl. B01d 53/00
U.S. Cl. 55—70 12 Claims

A process and apparatus for the recovery of ammonia and carbon dioxide from urea synthesis tail gas is disclosed, wherein the tail gas is intensively contacted with an aqueous media in at least one absorption zone, as is known to the art, and thereafter the gas mixture leaving such absorption zone is immediately mixed with a gas which is inert to the constituents of the tail gas. The apparatus involves a gas bubble washer and an intensive gas-liquid contactor, with means for supplying

inert gas overlying such contactor. By the use of the present invention the possibility of forming an explosive mixture of the



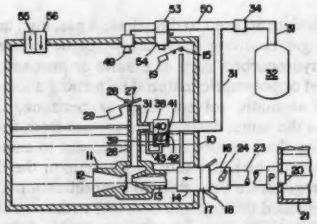
gases leaving the absorption zone is eliminated, or at least minimized.

3,691,730

FUEL TANK INERTING SYSTEM

William G. Hickey, Corona Del Mar, and Richard L. Kenyon, Costa Mesa, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 18, 1971, Ser. No. 144,589
Int. Cl. B01d *19/00*
U.S. Cl. 55—166 18 Claims



A fuel tank inerting system in which the tank ullage contains a non-combustible gaseous mixture of fuel vapor, oxygen and an inert gas, such mixture from the ullage being circulated through incoming liquid fuel when the tank is being filled for scrubbing dissolved oxygen from the fuel and diluting the same as it rises to the tank ullage, and there being a means for introducing a fresh supply of inert gas from a separate source for continuing the scrubbing and diluting of oxygen from the incoming fuel only when the oxygen content of the tank ullage nears a predetermined yet non-combustible percentage, whereby a minimum amount of fresh inert gas is utilized for maintaining the ullage gases incombustible during filling of the tank and during subsequent ascending flight of the aircraft.

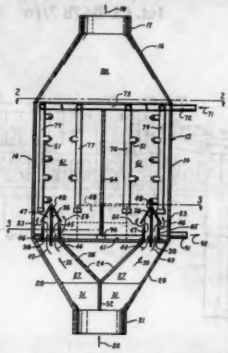
3,691,731

SMOKE CLEANING DEVICE

Bernabe V. Garcia, P.O. Box 459, Pollock Pines, Calif.

Filed July 13, 1970, Ser. No. 54,326
Int. Cl. B01d *47/00*
U.S. Cl. 55—223 3 Claims

Incoming smoke, filled with pollutants, is introduced into an inlet stack on the bottom of a vertically elongated housing. As the smoke ascends, it is first divided into four paths defined by separate passageways each leading upwardly through riser conduits mounted on a horizontal floor forming a common basin for four separate scrubbing chambers. In rising through each conduit the smoke is further divided by a central partition in the riser and is forced to undergo a double change in direction in emerging from beneath a peaked roof sheltering the riser from the intense water fog and spray in each scrubbing chamber. As the smoke rises through the scrubbing



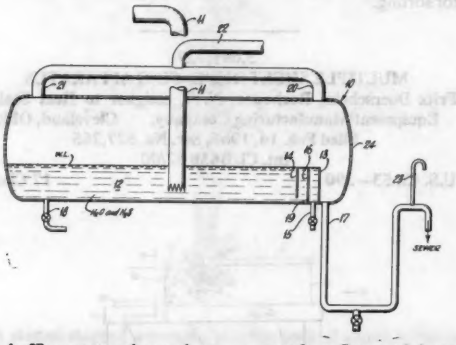
chambers toward the common exhaust stack at the top of the housing, the dense water fog from spray nozzles separate the pollutants from the smoke and carries the pollutants downwardly into the water bath located in the basin. From the basin the pollutant-laden water is carried away by drain pipes and the scrubbed smoke is emitted through the exhaust stack.

3,691,732

BAFFLE CONSTRUCTION FOR FLARE SEAL DRUMS

John F. Richards, Baton Rouge, La., and Walter L. Terrell, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed June 18, 1970, Ser. No. 47,527
Int. Cl. B01d *47/02*
U.S. Cl. 55—227 6 Claims



A baffle construction and arrangement for a flare seal drum to prevent makeup or seal water supplied to the drum from continuously flushing water saturated with undesirable dissolved materials, such as hydrogen sulfide (H_2S), to the sewer while preventing hydrocarbon buildup within the flare seal drum.

3,691,733

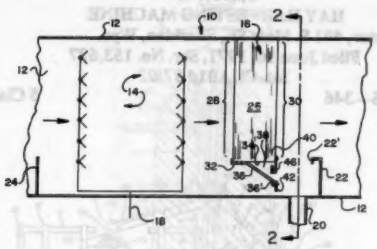
AIR TREATMENT APPARATUS

William F. Stockford, P.O. Box 1351, Salisbury, N.C.

Filed July 9, 1970, Ser. No. 53,405
Int. Cl. B01d *47/00*
U.S. Cl. 55—257 10 Claims

An elongate hollow casing of the type including a spray-type air washer unit and a water-removing eliminator unit, wherein

the eliminator unit includes a plurality of spaced louvres extending vertically across the longitudinal axis of the housing for separating water from the air passing therethrough and discharging the water downwardly from the lower ends of the louvres. A base plate is attached to the lower edge of the front portion of the eliminator unit forming a secondary air outlet in the bottom rear portion thereof, the base plate including a downwardly and rearwardly inclined portion extending to a



point beneath the surface of the water in the bottom of the casing. The secondary air outlet imparts a downward vector on the air passing through the eliminator unit tending to assist the discharge of water deposited thereon, and a baffle means extends downwardly from the lower rear edge of the eliminator unit and includes a trough along the lower edge thereof for collecting water discharged from the louvres and preventing reentrainment thereof in the air passing through said secondary air outlet.

3,691,734

Patent Not Issued For This Number

3,691,735

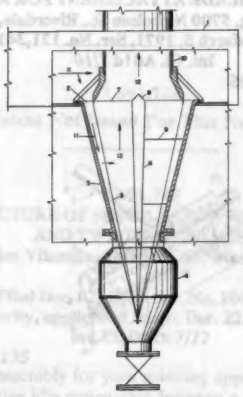
MINI-MICRON PARTICLE SEPARATION SYSTEM

Vincent L. Knierim, 1420 Linville St., Kingsport, Tenn.

Filed Oct. 23, 1970, Ser. No. 83,590

Int. Cl. B01d *45/06*

U.S. Cl. 55—391 **1 Claim**



A highly effective very small particle separation system comprising a single or multiple unit arrangements of elements for controlling the flow and relative velocities of a contaminated gas stream adjacent to a clean gas stream effecting a high degree of efficiency of separation of very small sized particulate matter from the contaminated gas stream.

3,691,736

POCKET FILTER FOR AIR AND GAS PURIFICATION

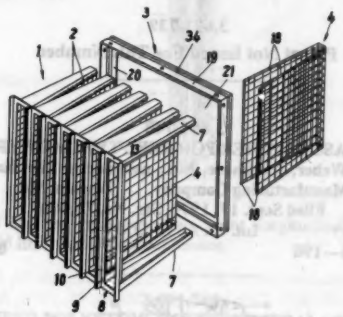
Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, 03, Berlin, Germany

Filed Feb. 2, 1970, Ser. No. 12,941

Claims priority, application Germany, Feb. 26, 1969, G 69 08 374

Int. Cl. B01d *25/22*

U.S. Cl. 55—484 **13 Claims**



A pocket filter of V-shaped cross-section has, to define the pocket opening, two end plates and two side members, each of the side members having outwardly bent outer edges as a connecting piece for assembly with adjacent pocket filters; V-shaped clamps fit within the pockets to hold a strip of filter material in place.

3,691,737

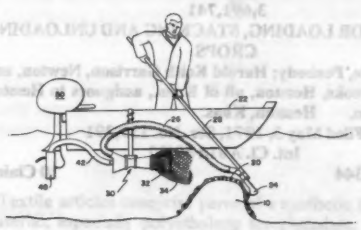
TECHNIQUE FOR RECOVERING SEA MOSS AND THE LIKE

William S. Hodgson, 52 Fort Hill St., Hingham, Mass.

Filed Sept. 30, 1970, Ser. No. 76,688

Int. Cl. A01d *45/08*

U.S. Cl. 56—9 **23 Claims**



A method and apparatus for harvesting marine vegetation such as sea moss which tends to grow on and about submerged rocks and the like. The device employed in practising the invention includes a flexible hose having a specially constructed harvester head attached to one end. Water is pumped through the hose at a substantial velocity to develop a substantial suction at the submerged harvesting head. When the harvesting head is moved adjacent a sea moss plant, the plant is ingested into the head. The drag on the ingested plant which is developed by the water flow is insufficient to break the bushy part of the plant from the stem but does impart a firm, steady pull on the plant. The harvester head includes a specially formed inlet opening having a reversely bent flow path which is defined by a pair of spaced, parallel edges. The edges in the harvester head engage the stem of the ingested plant to cause the stem to wrap about the edges in a general S-shaped configuration. The wrapping of the stem about the edges in combination with the firm steady drag on the ingested bushy portion of the plant firmly grips the stem. Thus, when the head is

pulled, the stem breaks at its weakest point. The separated portion of the plant than flows through the hose to a collecting net or other appropriate collecting device.

3,691,738

Patent Not Issued For This Number

3,691,739

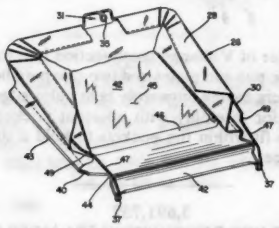
Patent Not Issued For This Number

3,691,740

GRASS CATCHER FOR REEL TYPE MOWER

Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 17, 1970, Ser. No. 73,000
Int. Cl. A01d *53/06*
U.S. Cl. 56—198 **8 Claims**



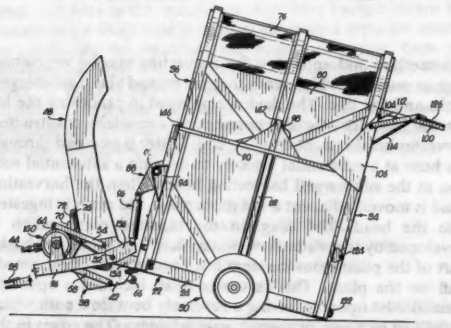
A grass catcher means for a reel type lawn mower having a frame detachably secured at the upper end directly to the mower handle and the lower end supported upon the bolt means that also secure the rear wheels to the mower housing.

3,691,741

MACHINE FOR LOADING, STACKING AND UNLOADING CROPS

Allen A. White, Peabody; Harold Keith Garrison, Newton, and Dean P. Brooks, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed May 3, 1971, Ser. No. 139,391
Int. Cl. A01d *89/00*
U.S. Cl. 56—344 **10 Claims**



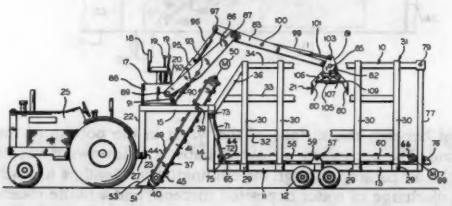
A harvesting vehicle picks up the crop from the field, feeds it into a container, presses the crop into a compact stack and unloads the stack at a desired point of discharge. The press is reciprocated vertically with the container through use of a U-shaped lift swingable on the container and having arms that are operably coupled with the press. A normally locked endgate is controlled by the press such as to unlock the endgate and raise it to an open position for unloading in response to raising of the press. The container is tiltable for unloading purposes through use of an actuator common to the press such as to effect tilting after the endgate is opened and after the press is raised.

3,691,742

HAY HARVESTING MACHINE

Don Brewster, 401 S. Main St., Sheridan, Wyo.

Filed June 16, 1971, Ser. No. 153,627
Int. Cl. A01d *87/02*
U.S. Cl. 56—346 **5 Claims**



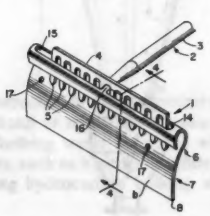
Hay harvester in the form of a trailer having a box-like body and a conveyor forming the bottom of the body and tiltable to unload a compacted stack of hay, or to pick up a stack of hay for transportation. An inclined elevating conveyor is mounted at the front end of the body to pick up hay from the ground and discharge the hay into the body over the front wall of the body, as the trailer is drawn along the ground, straddling a wind-row of hay. A power hay fork is mounted on an operator's platform at the front of the trailer on pivoted boom arms and lift arms, and is operated by fluid pressure to pick up the hay as discharged into the body and distribute the hay along the body in cooperation with the unloading conveyor and to compact the distributed hay into a stack.

3,691,743

SCRAPING BLADE ATTACHMENT FOR A RAKE

Espey T. Browning, 5700 Nicholson St., Riverdale, Md.

Filed March 5, 1971, Ser. No. 121,341
Int. Cl. A01d *7/10*
U.S. Cl. 56—400.05 **1 Claim**



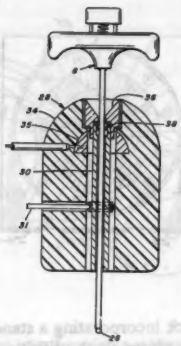
A scraping blade attachment for use on any conventional hand rake, regardless of the spacing of tines thereon, wherein said scraper blade has a head or top portion with slot or openings therein, said openings being such as to receive the tines of different rakes therethrough and each of said rakes having a different number and spacing of tines thereon to hold the scraper blade attachment to the rake in a secure manner.

3,691,744

YARN PIECING DEVICE

Joseph W. Dubois, North Smithfield, R.I., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,344
Int. Cl. D01h 15/00, 17/00
U.S. Cl. 57—34 R 4 Claims



An apparatus for inserting a yarn tail into operating position within the spinning head of a device for performing open end yarn spinning which comprises a first elongated hollow member of a length greater than the length of the spinning head so that it can be extended completely therethrough, a second elongated member at least as long as the first member, the second member being located within the first member and being reciprocable with respect thereto, operator means attached to said first and second members at one end thereof to effect longitudinal movement of the second member with respect to the first member, and means on the end of said second elongated member opposite the operator means cooperable with said first elongated member to hold the yarn tail therebetween when inserting yarn into a spinning head.

3,691,745

Patent Not Issued For This Number

3,691,746

Patent Not Issued For This Number

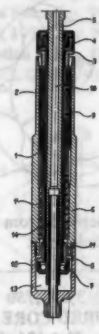
3,691,747

MANUFACTURE OF SPINDLES FOR RING-SPINNING AND TWISTING FRAMES

Eduardo Salles Vilanova, Guimera 67, Manresa (Barcelona), Spain

Filed Dec. 22, 1970, Ser. No. 100,567
Claims priority, application Spain, Dec. 22, 1969, 374810
Int. Cl. D01h 7/12
U.S. Cl. 57—135 6 Claims

A spindle assembly for yarn spinning apparatus provides a resilient rotative idle connection between a spindle shaft and spindle box of the spindle assembly whereby self centering of the axis of rotation of the spindle shaft can occur without transmission of undue vibration to the spindle box during operation. A resilient plastic tube is connected to the spindle box and to a rigid tube which is, in turn, affixed to a pair of bearings mounting the spindle shaft at its ends. First shock absorber means are provided between the resilient tube and the spindle box and in an alternative embodiment of the invention second shock absorber means are provided between the spindle box and the rigid tube at a point longitudinally spaced from said first shock absorber means.

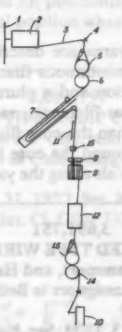


3,691,748

TEXTURED POLYETHYLENE TEREPHTHALATE YARNS

Michel Buzano, Villeurbanne (Rhone), France, assignor to Societe Rhodiaceta, Paris, France

Division of Ser. No. 799,795, Feb. 17, 1969. This application Sept. 23, 1970, Ser. No. 74,913
Claims priority, application France, Feb. 19, 1968, 140,386
Int. Cl. D02g 3/00
U.S. Cl. 57—140 J 2 Claims



Textile articles comprise yarns of a synthetic thermoplastic material, especially polyethylene terephthalate, in which the individual filaments comprise alternating zones of increasing and decreasing thickness, the thinner zones having the higher crystallinity index and vica versa; the filaments have a non-spiral three-dimensional crimp, and both they, and the yarn comprising them, have a high apparent volume. The yarn is made by only partially stretching the initial yarn in contact with a crack promoting agent such as an aqueous alcohol, and subsequently giving the yarn, before or after it is made up, a heat treatment while it is in a relaxed state.

3,691,749

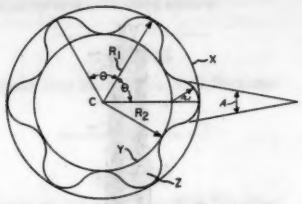
MULTILOBAL MULTIFILAMENT YARN

Jerry Bruce McKay, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1970, Ser. No. 99,447
Int. Cl. D02g 3/34
U.S. Cl. 57—140 J 3 Claims

Multifilament PACM polyamide yarn, of multilobal filaments having specified cross-sectional characteristics, is false-twist textured into yarn which provides fabrics having im-

proved visual aesthetics. Freedom from objectionable glitter is exemplified for yarns of hexalobal filaments composed of



PACM-12 polyamide derived from bis(4-aminocyclohexyl)-methane and dodecanedioic acid.

3,691,750

TEXTURED CORE YARNS

Graham Thomas Waters, Plot 191, Highfield Close, Caerloon in Monmouthshire, South Wales, United Kingdom assignor to Imperial Chemical Industries Limited, London, England.

Continuation-in-part of Ser. No. 805,598, March 10, 1969, Pat. No. 3,557,873. This application March 18, 1971, Ser. No. 125,683

Int. Cl. D02g *3/38, 3/04, 3/28*

U.S. Cl. 57—144 **11 Claims**

False twist textured yarns are described which are composed of a plurality of continuous filaments forming a false twist textured core portion and a plurality of wrapper false twist textured continuous filaments, said wrapper filaments being of a higher bulk than the core filaments, said filaments periodically wrapping around the core filaments and forming reversing helices at intervals along the yarn.

3,691,751

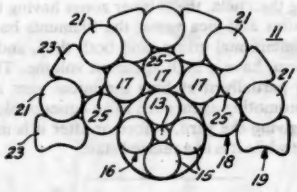
INTERLOCKED TYPE WIRE STRAND

Carl Duane Hiller, Williamsport, and Harold W. Karge, Montoursville, both of Pa., assignors to Bethlehem Steel Corporation

Filed April 23, 1971, Ser. No. 136,687

Int. Cl. D07b *1/06, 1/08*

U.S. Cl. 57—145 **12 Claims**



A lock type wire strand for aerial tramways and the like has the bottom portions of the interlocked outer wires prolated, or bulged. The prolated portions of the interlocked wires extend into the interstices between wires in the next adjacent layer of wires under the interlocked layer of wires and contacts adjacent wires in said next adjacent layer to provide additional resistance against compression forces and relieve secondary bending strains in the interlocked wires of the strand.

3,691,752

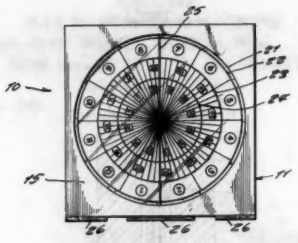
ALARM CLOCK

Lawrence E. Whittier, 201 W. High St., Somersworth, N.H.

Filed Sept. 9, 1970, Ser. No. 70,635

Int. Cl. G04b *23/00*

U.S. Cl. 58—16 **1 Claim**



A novel alarm clock incorporating a standard clock motor and gearing unit, the alarm clock utilizing four dials in substitution of the conventional four hands, each of the four dials being made of plexiglas, each of the dials being of a different size and of circular shape which are concentrically positioned so that indicia on all four dials can be read at the same time, the largest dial representing an alarm control, a next largest dial representing the time in hours, the next smaller dial representing the time in minutes, and the smallest dial representing time in seconds.

3,691,753

ELECTRIC OR ELECTRONIC TIMEPIECE

Masahiro Kurita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,141

Claims priority, application Japan, Sept. 25, 1969, 44/90974

Int. Cl. G04c *3/00*; G04b *27/00*

U.S. Cl. 58—23 R **6 Claims**

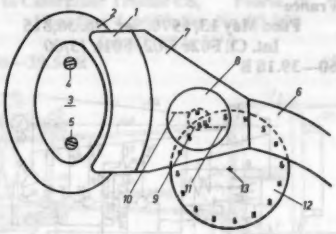
An electric or electronic timepiece having a step motor energized by an electric signal and a second wheel moving intermittently and driven by said rotor. A member is mounted on the rotor, or on an intermediate wheel coupling said rotor and second wheel, for positioning said second wheel at predetermined positions when said electric signal is cut off.

3,691,754

VIBRATORY DRIVE SYSTEMS

Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Berne, Switzerland

Filed Nov. 12, 1970, Ser. No. 88,715
Claims priority, application Switzerland, Nov. 13, 1969, 16873/69
Int. Cl. G04c *3/02*; F16h *27/02*; H02k *33/00*
U.S. Cl. 58—23 D 15 Claims



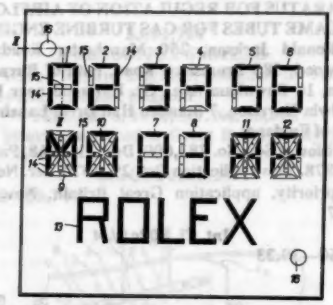
A mechanism for transforming a vibratory movement into a rotating movement, particularly for use in timepieces, wherein stepping pawls connected to a vibrating member act onto a ratchet wheel loosely mounted on the vibrating member for relative oscillation in the plane of vibration, the ratchet wheel being advanced by relative displacement between said vibrating member and stepping pawls respectively and said ratchet wheel due to the inertia of the latter. The rotating movement of the oscillating ratchet wheel is transmitted to a gear train by a magnetic coupling or transmission.

3,691,755

CLOCK WITH DIGITAL DISPLAY

Pierre Girard, Bienne, Switzerland, assignor to Manufacture des Montres Rolex S.A., Canton of Bern, Switzerland

Filed Oct. 16, 1970, Ser. No. 81,288
Claims priority, application Switzerland, Oct. 21, 1969, 15727/69
Int. Cl. G04c *3/00*; G04b *37/00*, *19/30*
U.S. Cl. 58—50 R 5 Claims



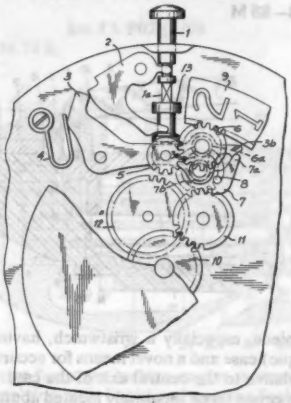
A digital display timepiece having a panel of display elements which change their optical properties when electrically excited, an electronic circuit, the outputs of which are connected to the display elements, and a time base controlling the logic circuit, such that excitation of various sub-assemblies of said display elements controlled by the logic circuit displays the desired time, where the logic circuit and the display panel are so connected as to constitute a monolithic unit having a minimum number of input connections linking the output of the time base to the logic circuit.

3,691,756

DATE AND DAY CORRECTING DEVICE

Tsunayoshi Ono, Chino-shi, Nagano, Japan, assignor to Kabushiki Kaisha Surva Seikosha, Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,168
Claims priority, application Japan, Dec. 8, 1969, 44/97781
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 1 Claim



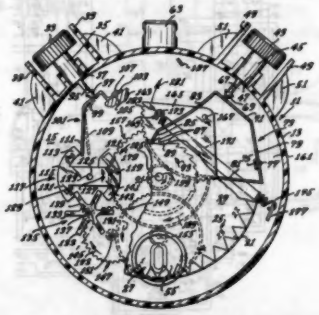
A calendar timepiece having a date and/or day correcting device operated from outside the watch by displacing an operating member for effecting day and date correction at a first position of said operating member through a calendar correcting member, and for positioning said calendar correcting member at a neutral position when said operating member is at a second position.

3,691,757

HAND HELD TIMER-LAP COUNTER TOY

Dennis H. Merino, Harbor City, and Floyd E. Schlau, Palos Verdes Estates, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 31, 1972, Ser. No. 221,986
Int. Cl. G04f *7/04*
U.S. Cl. 58—76 9 Claims



A unitary, integrally arranged toy allowing simultaneous but independent interval timing and event counting through manipulation of appropriate buttons by fingers of one hand, the device including a button actuated elapsed time mechanism with a sweep seconds hand moving over a time indicating dial only as long as the button is depressed, and including a button actuated event counting mechanism with an event indicating wheel or disc visible through a window in the time indicating dial whereby a successively increasing numeral is seen with each separate button depression.

3,691,758

WRISTWATCH COMPRISING A MONOCOQUE CASE

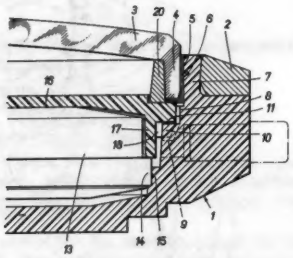
Jean-Claude Schneider, La Chaux-de-Donds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et fils S.A., Le Locle (Canton of Neuchatel), Switzerland

Filed Oct. 8, 1971, Ser. No. 187,615

Claims priority, application Switzerland, Oct. 15, 1970, 15296/70

Int. Cl. G04b 37/00, 19/06

U.S. Cl. 58—88 M 6 Claims



A timepiece, especially a wristwatch, having a one-piece (monocoque) case and a novel means for accurately centering the dial relative to the central axis of the case. The centering means comprises three separately located abutment means on the dial and on the case, two of which are diametrically opposed to each other while the third is on a radius perpendicular to the diameter of the first two.

3,691,759

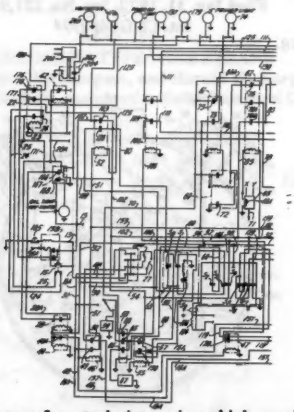
AUTOMATIC CONTROL SYSTEM FOR A TURBOJET ENGINE EMPLOYED IN A STATIONARY ENVIRONMENT

Arthur M. Scheerer, Wayne, N.J., assignor to Curtiss-Wright Corporation

Filed Jan. 14, 1971, Ser. No. 106,496

Int. Cl. F02g 3/00; F02c 7/26, 9/04

U.S. Cl. 60—39.09 6 Claims



A control system for a turbojet engine which provides a single on-off switch to initiate start-up and shutdown phases of operation of the engine. The control system has a plurality of sensing elements and time delay electrical switches and valves interconnected to automatically control operation of auxiliary components of the engine, such as pumps, motors and fans, and the engine in proper sequence as well as monitor their operations during start-up, sustained and shutdown phases of operation of the engine. The system also has various failsafe circuits which include sensing elements which are set or adjusted to automatically effect shutdown of the engine upon malfunction during any of the phases of operation of the engine.

3,691,760

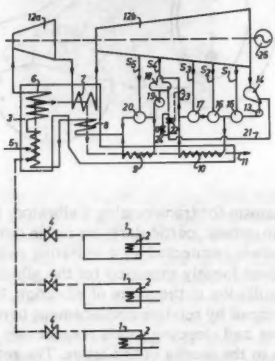
METHOD AND MEANS FOR IMPROVING THE OPERATION OF A STEAM GAS PLANT INCLUDING A GAS TURBINE AND A STEAM TURBINE WITH A STEAM GENERATOR AT THE DOWNSTREAM END

Jean Vidal, Ville d'Avray; Jean Parisot, Paris, and Jacques Lemoine, Paris, all of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,815

Int. Cl. F02c 7/02; F01k 13/00

U.S. Cl. 60—39.18 B 3 Claims



In a steam gas plant comprising a steam generator fed by the exhaust gases of a gas turbine and feeding a steam turbine, the condensed steam at the output of the steam turbine is returned to the input of the steam generator through water heaters and a deaerator. To ensure constancy of the temperature of the water in the deaerator, which should be lower than the saturation temperature of the steam heating said the deaerator even under reduced load conditions, a fraction of the water reaching or about to reach said the deaerator is returned to the condenser. A gate controlled by the temperature at the input of the deaerator is adapted to ensure constancy of the temperature of the water into the deaerator.

3,691,761

APPARATUS FOR REGULATION OF AIRFLOW TO FLAME TUBES FOR GAS TURBINE ENGINES

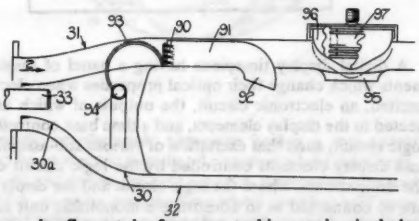
Squire Ronald Jackson, 250 Manchester Road; Kenneth Greenwood, 585 Brumshaw Road, both of Burnley; Alban Heaton, 16 Dawnham Ave., Gt. Harwood near Blackburn, and Alwin Harrison, 7 Standen Hall Drive Lanehead, Burnley, all of England

Division of Ser. No. 783,009, Dec. 11, 1968, Pat. No. 3,577,878. This application Oct. 29, 1970, Ser. No. 85,181

Claims priority, application Great Britain, Nov. 10, 1967, 51,293/67

Int. Cl. F02c 9/14

U.S. Cl. 60—39.23 6 Claims



An annular flame tube for a gas turbine engine includes a primary combustion air inlet, a plurality of secondary com-

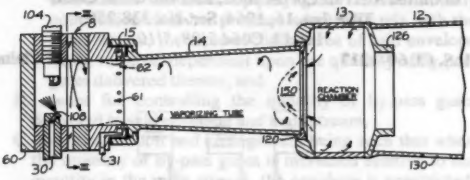
bustion air inlets and variable air flow restricting means associated with at least some of the inlets, the restricting means being expandable in response to temperature or pressure to vary the ratio of primary combustion air to secondary combustion air.

3,691,762

CARBURETED REACTOR COMBUSTION SYSTEM FOR GAS TURBINE ENGINE

John G. Ryberg, and Ernest W. Landen, both of Peoria, Ill., assignors to Caterpillar Tractor Co, Peoria, Ill.

Filed Dec. 4, 1970, Ser. No. 95,050
Int. Cl. F02c 7/10
U.S. Cl. 60—39.51 R 10 Claims



A carbureted reactor combustion system for use in a gas turbine power plant. Said combustion system has an tangential air swirler means and a vaporizing tube wherein liquid fuel is entrained by swirling air and vaporized by heat from recirculating combustion gases and highly compressed intake air. The vaporizing tube is located separately from and upstream of the reaction chamber to afford protection from the destructive heat encountered therein. The system provides a homogeneous and stoichiometric mixture of air and fuel which burns completely and produces a substantially pollutant-free exhaust. The entrained liquid fuel is supplied to said vaporizing tube at sump pressure or some other very low pressure and is not injected. Ingress of said fuel to said vaporizing tube is controlled solely by and in proportion to the swirling air flow. A controlled and constant air-fuel ratio is obtained without recourse to a separate control system for the fuel supply. The gas turbine power plant is capable of selective operation on a simple cycle or a mixed, simple and regenerative cycle.

3,691,763

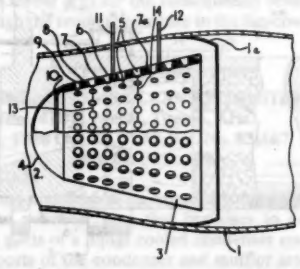
Patent Not Issued For This Number

3,691,764

FUEL SUPPLY SYSTEMS

Peter G. Ware, Rugby, England, assignor to The Dunlop Company Ltd., London, England

Filed July 8, 1970, Ser. No. 53,212
Claims priority, application Great Britain, July 11, 1969, 34941/69
Int. Cl. F02c 3/24
U.S. Cl. 60—39.74 R 7 Claims



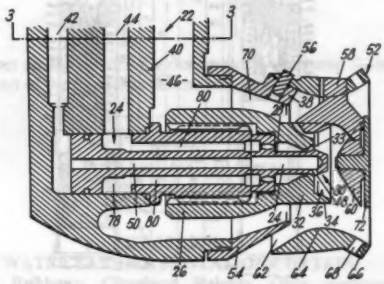
A fuel supply nozzle for a gas turbine engine comprising a porous element pierced by a number of passages through which air may pass into the combustion chamber, drawing in fuel which is fed into the porous element.

3,691,765

FUEL INJECTOR FOR A GAS TURBINE ENGINE

Denis Richard Carlisle, Risley, England, assignor to Rolls Royce Limited, Derby, England

Filed Dec. 7, 1970, Ser. No. 95,704
Claims priority, application Great Britain, Dec. 12, 1969, 59,965/69
Int. Cl. F02g 1/00
U.S. Cl. 60—39.74 R 8 Claims



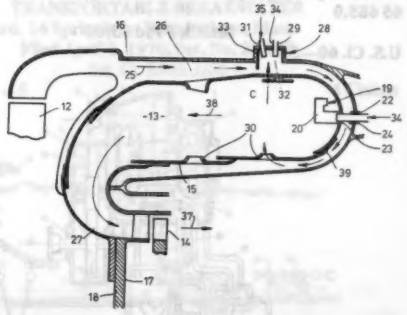
A fuel injector for a gas turbine engine is arranged to be capable of supplying both liquid and gaseous fuels. The fuel injector has a central member which has a plurality of liquid fuel ducts having respective nozzles, a cowl surrounds the central passage and defines therewith an annular gaseous fuel passage, a baffle is mounted on the cowl downstream of the liquid fuel nozzles and deflecting face is provided inside the cowl. The fuel emitted from the nozzles is arranged to pass between the cowl and the baffle and the fuel emitted from the central one of the nozzles is arranged to impinge upon the deflecting face. A flow of high pressure air is arranged to flow through a passage defined by the shroud and the cowl and flow into the passage defined by the cowl and the central member.

3,691,766

COMBUSTION CHAMBERS

Keith Harold Champion, Rickmansworth, England, assignor to Rolls-Royce Limited, Derby, England

Filed Dec. 16, 1970, Ser. No. 98,837
Int. Cl. F02c 7/26
U.S. Cl. 60—39.82 P 2 Claims



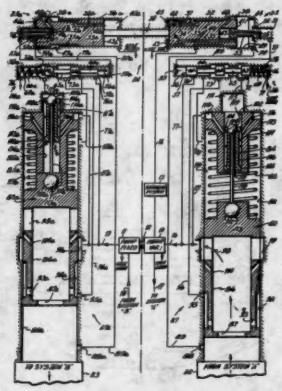
The invention pertains to combustion apparatus for a gas turbine engine comprising a combustion chamber lying within a casing defining therewith a passage for the supply of air to the combustion chamber, an igniter situated in a recess formed in the wall of the casing, and a baffle situated in the passage adjacent and upstream of the igniter so that air flowing through the passage to the combustion chamber is induced by the baffle to form a stabilized vortex around the igniter.

3,691,767

REVERSIBLE FLUID POWER TRANSFER APPARATUS

James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,114
Int. Cl. F15b 15/18
U.S. Cl. 60—53 R 11 Claims



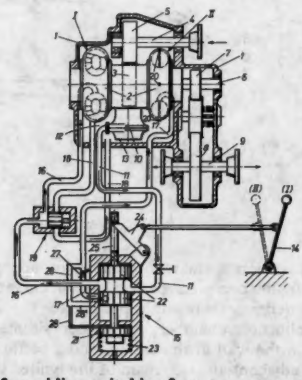
In a reversible fluid power transfer package, sensing means detect which of two mechanically interconnected fluid pressure translating devices is required to operate as a pump and which is required to operate as the motor. In response to a signal from the sensing means, dual-functioning check valve-flow limiter components associated with each device are ported according to the required mode of function of the respective device, so that whichever device is to operate as the motor is automatically provided with a flow limiter valve, and whichever device is to operate as the pump is automatically coupled to a check valve on its outlet side. The check valve may incorporate variable bypass features.

3,691,768

METHOD OF AND SYSTEM FOR CHANGING THE TRANSMISSION RATIO OF A HYDRODYNAMIC VEHICLE TRANSMISSION

Bernhard Gruschka, and Berthold Herrmann, both of Heiden Heim-Schnaitheim, Germany, assignors to Voith Getriebe KG, Heidenheim/Brenz, Germany

Filed Dec. 29, 1970, Ser. No. 102,343
Claims priority, application Germany, Dec. 31, 1969, P 19 65 685.0
Int. Cl. F16d 33/00
U.S. Cl. 60—54 5 Claims



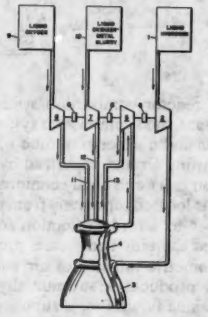
A method of providing switching from torque converter engagement to fluid coupling engagement in a hydrodynamic vehicle transmission having a plurality of working circuits, whereby at least during changing from torque converter engagement to fluid coupling engagement, the pressurized working circuit is maintained in a pressurized condition while the unpressurized working circuit is filled with pressure medium with controlled speed. Said pressurized condition is maintained until an appropriate pressurization of said latter work circuit has been attained, at which moment the first-named working circuit is depressurized.

3,691,769

MULTI-COMPONENT PROPELLANT JET PROPULSION

Joseph R. Keilbach, 186 Griswold St., Glastonbury, Conn., and Vito J. Sarli, 903 Avery St., Wapping, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 16, 1964, Ser. No. 338,259
Int. Cl. C06d 5/08, 5/10
U.S. Cl. 60—217 17 Claims



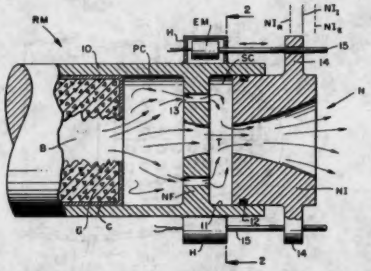
In the method of supplying a multi-component propellant including metal, oxidizer and hydrogen to the combustion chamber of a multi-component propellant rocket motor, the improvement which comprises stably suspending finely divided hollow particles of the metal in a liquid oxidizer to form a suspension of hollow particles of the metal in the liquid oxidizer, the hollow particles of said metal having a specific gravity approximately equal to the specific gravity of the liquid oxidizer; such that such suspension is stable and capable of withstanding the gravitational fields and acceleration forces to which the rocket engine system is subjected.

3,691,770

THRUST CONTROL MEANS FOR A SOLID PROPELLANT ROCKET MOTOR

Robert H. Nunn, Davis, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 385,104, July 23, 1964, abandoned. This application Dec. 2, 1966, Ser. No. 599,347
Int. Cl. F02k 9/04
U.S. Cl. 60—254 5 Claims



1. In a variable thrust rocket motor of the type having a combustion chamber and a solid propellant grain with burning

characteristics which produce an increase in burning rate of the grain with increase in combustion chamber pressure and a corresponding increase in thrust, and an igniter for initiating combustion of the grain, the improvements, in combination, comprising;

A. An exhaust nozzle having;

a. a convergent sub-sonic portion communicating with said combustion chamber through which a main stream of combustion chamber gases flow,

b. an axially aligned supersonic divergent exhaust portion, and

c. an effective throat portion disposed axially between the convergent and divergent portions, the outer wall of which is formed by an envelope of inwardly moving combustion chamber by-pass gases at substantially combustion chamber pressure adapted to mix with the main stream, the cross-sectional area of said envelope being variable, dependent upon the quantity of by-pass gases delivered thereto, and

B. means for controlling the quantity of by-pass gases delivered to said envelope and main stream,

C. the construction and arrangement being such that when the quantity of by-pass gases is increased relative to the quantity in the main stream, the envelope is constricted, reducing the effective throat area and increasing chamber pressure and thrust, and when the quantity of by-pass gases is decreased relative to the quantity in the main stream, the envelope is enlarged, increasing the effective throat area and decreasing chamber pressure and thrust.

3,691,771

GAS TURBINE ENGINE THRUST DEFLECTORS

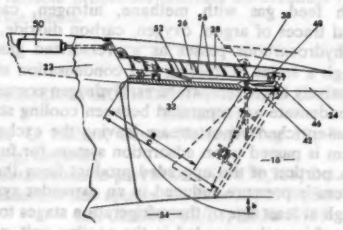
Rowan Herbert Colley, Derby, England, assignor to Rolls Royce Limited, Derby, England

Filed April 1, 1971, Ser. No. 130,417

Claims priority, application Great Britain, April 2, 1970, 15,761/70

Int. Cl. F02k 3/02

U.S. Cl. 60—226 A **3 Claims**



The blocker flaps in the fan duct of a gas turbine ducted fan engine are mounted for simultaneous pivoting across the fan duct and movement bodily downstream thereof so as to attain the required throat area for the subsequently reversed flow of fan air through the reverser aperture in the fan cowl.

3,691,772

EXHAUST GAS CLEANSING SYSTEM

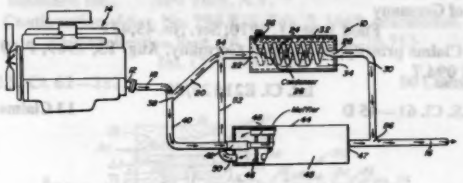
Sidney E. Cross, 416 E. Mabel, Tucson, Ariz.

Filed Oct. 29, 1970, Ser. No. 85,167

Int. Cl. F01n 3/02

U.S. Cl. 60—320 **4 Claims**

The exhaust manifold of an internal combustion engine is connected to a header pipe that branches to parallel connected inlet ports of a liquid cooled condenser and a muffler. The outlet ports of the condenser and muffler are connected in parallel to a tailpipe. A conduit section communicates between the interior of the muffler and the inlet port of the condenser thereby enabling some of the gas acted upon by the muffler to be also treated by passage through the condenser. A substantial amount of hydrocarbon material condenses in the



condenser so that purified exhaust gas is delivered from the outlet port of the condenser to the tailpipe.

ERRATUM

For Class 60—39.5 see:
Patent No. 3,691,793

3,691,773

WATER BARRIER FLOTATION CURTAIN

Jon R. Ruhlman, Cleveland Heights, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed June 22, 1970, Ser. No. 48,323

Int. Cl. E02b 15/04, 3/06

U.S. Cl. 61—1 **27 Claims**

A water barrier flotation curtain for use in a body of water comprising a barrier having a sandwich-like construction, which is substantially vertical having an upper edge and a lower edge, a flotation means positioned within the barrier and adapted to float beneath the surface of the water, and an anchor attached to the lower edge of the barrier wherein the lower edge of the barrier substantially follows the contour of the floor of the body of water.

3,691,774

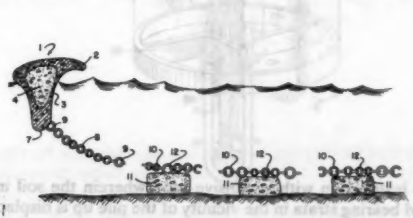
TRANSPORTABLE BREAKWATER

Carl G. Hard, 14 Springlane, Framingham, Mass.

Filed April 1, 1970, Ser. No. 24,748

Int. Cl. E02b 3/06

U.S. Cl. 61—5 **4 Claims**



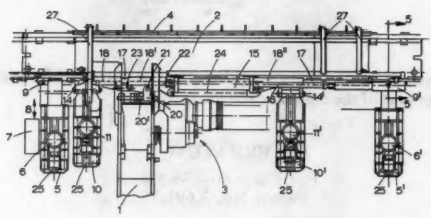
The invention relates to a transportable breakwater comprising a plurality of floating units, each unit having a horizontal fin-like protrusion which rotates to a vertical position for intercepting waves when the unit is tipped leeward by wave action. Mooring blocks placed in tandem and the connecting chains permit the floating units to yield gradually to oncoming waves.

3,691,775

MINERAL MINING INSTALLATIONS

Bernhard Holtrup, Cappenbergerstrasse 28, 4712 Werne, and Johannes Laabs, Konigslandwehr 46, 4619 Oberaden, both of Germany

Filed June 11, 1970, Ser. No. 45,471
Claims priority, application Germany, Aug. 13, 1969, P 19 41 094.7
Int. Cl. E21d 23/00
U.S. Cl. 61—45 D 13 Claims



A mineral mining installation which has a mineral face conveyor arranged to transfer mineral onto a roadway conveyor supported on a trough and movable relative thereto. Roof support props are disposed on the side of the roadway conveyor adjacent the mineral face conveyor.

The props are operably divided into a first set of props connected for movement with the trough and a second set of props connected for movement with the mineral face conveyor and slidably guided on a beam provided on the trough.

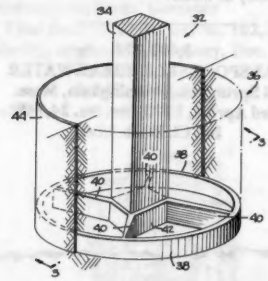
A shifting ram connected between the trough and the second set of props is used to relatively move the trough and the mineral face conveyor.

3,691,776

EXPANSIVE BASE PILE CONSTRUCTION

Judd R. Hull, Pleasanton, Calif., assignor to Raymond International, Inc., New York, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,550
Int. Cl. E02d 5/54, 5/72
U.S. Cl. 61—53 16 Claims



Pile installation with expansive base wherein the soil in a desired bearing strata in the vicinity of the pile tip is displaced by the tip into a region confined by a rim or skirt so that the soil forms a solid plug between and frictionally locked to the pile and rim or skirt.

3,691,777

Patent Not Issued For This Number

3,691,778

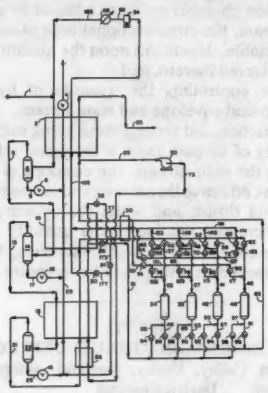
Patent Not Issued For This Number

3,691,779

HYDROGEN PURIFICATION

Joseph Meisler, Teaneck, N.J.; Gregory C. Banikiotes, Seaford, and Edward Harold Van Baush, Pearl River, both of N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,424
Int. Cl. F25j 1/02, 3/06
U.S. Cl. 62—23 16 Claims



A high purity, 97 to 99.9 percent hydrogen product is obtained by using a separation process consisting of a low temperature refrigeration system operating below 120°R, and an adsorption system operating on an adiabatic pressure-swing principle within the temperature range of 200° to 140°R. The hydrogen-rich feed gas with methane, nitrogen, carbon monoxide and traces of argon, oxygen, carbon dioxide, and low boiling hydrocarbons passes as a pressurized gaseous stream through a series of cooling and condensation stages having successively lower temperatures. Hydrogen containing vapor and condensate are separated between cooling stages. The hydrogen-enriched vapor stream leaving the exchanger cooling system is passed to an adsorption system for further upgrading. A portion of the upgraded product from the adsorption system is pressure reduced in an expander system, passed through at least one of the refrigeration stages to provide the net refrigeration needed in the cooling unit, and is thereafter used to purge and regenerate the adsorption system.

3,691,780

Patent Not Issued For This Number

3,691,781

METHOD AND APPARATUS FOR FORMING MODEL ICE SHEETS

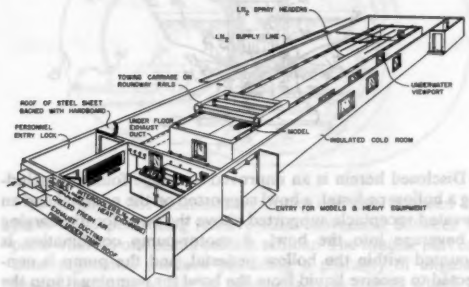
Roderick Y. Edwards, Jr., Annandale, Va., and David L. Benze, Jessup, Md., assignors to Arctec, Incorporated, Bowie, Md.

Filed July 30, 1971, Ser. No. 167,783
Int. Cl. F25c 1/04; G01m 10/00
U.S. Cl. 62—66 36 Claims

A process is described for rapidly forming upon the surface of a saline solution, a sheet of ice, the rehological properties of which permit the use of the sheet in conjunction with properly

scaled models of structures such as offshore oil drilling platforms, ships and other vehicles to predict reliably the full scale behavior of such vehicles or structures during interactions between the structures and natural ice cover.

An inert cryogenic fluid is sprayed through finely atomizing nozzles into the region above a pool of saline water, the surface layers of which are maintained at the fluid's freezing temperature. The vaporization of the liquid refrigerant is accompanied by the absorption of heat from the surface of the pool. This process is sufficiently violent to cause a relatively homogeneous turbulent flow of expanding cold gas over the pool surface such that the rate of heat transfer to the water surface is significantly enhanced over that which would



prevail in free convention heat transfer. The growth of the ice sheet is extremely rapid (e.g. 3×10^{-4} cm./sec.). Consequently, the growth of the individual ice crystals is inhibited in the horizontal direction, and the inclusion of salt is accelerated. The resultant sheet of ice is comprised of extremely small crystals. The structural properties of the ice sheet (elastic modulus and tensile strength) depend upon ambient temperature and salinity of the ice layer (FIG. 1). By controlling growth rate, pool salinity and temperature which is maintained subsequent to freezing, the structural properties of the ice sheet may be varied at will. This sheet of fine crystal ice with variable properties provides an excellent model of full scale ice sheets.

3,691,782

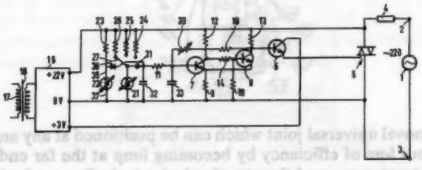
REFRIGERATOR THERMOSTAT AND ARRANGEMENT THEREOF

Walter U. Holzer, Droste-Hulshoff-Weg 19, D-7758 Meersburg, Germany

Continuation-in-part of Ser. No. 679,356, Oct. 31, 1967, abandoned. This application June 30, 1970, Ser. No. 51,195

Int. Cl. G05d *23/24*; H03k *19/30*

U.S. Cl. 62—209 **7 Claims**



A temperature control device for use in a frozen-foods compartment of a refrigerator, or the like comprises a pair of temperature-sensitive elements one of which is adapted to be inserted into the material to be frozen. The two elements are connected in a logic circuit which in turn controls a switching device to thereby control the operation of the refrigeration unit to establish and then maintain a desired temperature in the compartment.

3,691,783

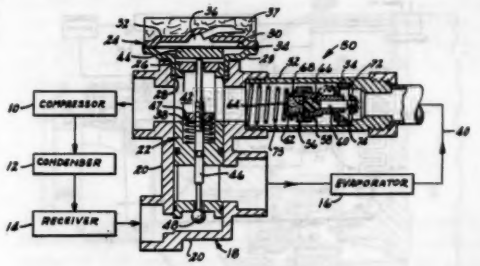
REFRIGERANT EVAPORATOR TEMPERATURE CONTROL

Robert H. Proctor, Dearborn, Mich., assignor to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 795,828, Feb. 3, 1969, abandoned. This application Sept. 25, 1970, Ser. No. 75,713

Int. Cl. F25b *41/00*

U.S. Cl. 62—212 **10 Claims**



An automotive air conditioner system having a temperature-responsive power means in the refrigerant suction line for throttling refrigerant flow from the evaporator when the evaporator temperature drops toward a value low enough to cause ice formations on the evaporator fin surfaces; the power means is preferably located upstream from the actuator means of a thermostatic expansion valve so that the throttling action reduces the pressure at the actuator means and causes the actuator means to respond to relatively high superheat, thereby requiring the expansion valve to flood the evaporator in a manner to temporarily raise the pressure and temperature within the evaporator for de-icer action.

3,691,784

CRYOGENIC REFRIGERATING APPARATUS

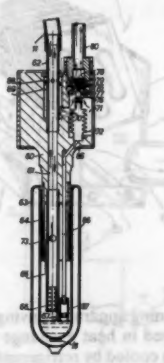
Kenneth Edmund Nicholds, and Geoffrey Brian Longbottom, both of Redditch, England, assignors to The Hymatic Engineering Company Limited, Redditch, England

Filed Feb. 3, 1970, Ser. No. 8,181

Claims priority, application Great Britain, 5,783/69

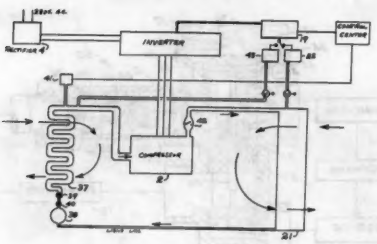
Int. Cl. F25b *19/00*

U.S. Cl. 62—218 **5 Claims**



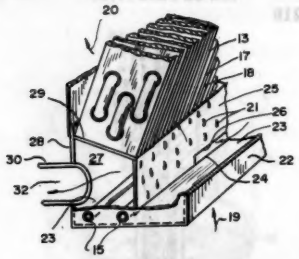
In a cryogenic refrigerating apparatus comprising a supply of refrigerating liquid in a Dewar flask, connected through a long flexible supply pipe to an evaporator for cooling a load, an injector being provided to deliver into the supply pipe a mixture of the liquid with gas from the ullage space in the top of the container. The evaporator is provided with a valve for automatically reducing the flow of refrigerant to it in response to the level of liquid in it.

3,691,785
SMALL CENTRIFUGAL HEAT PUMP
John D. Ruff, 206 Birch St., and Phillip R. Wheeler, 209 Pine St., both of Alexandria, Va.
Filed May 15, 1970, Ser. No. 37,779
Int. Cl. F25b 1/00
U.S. Cl. 62—230 2 Claims



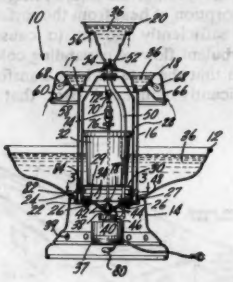
A variable capacity mechanical refrigeration system for heat pump or cooling operation, with a variable speed centrifugal compressor motor drive that uses an electronic frequency conversion apparatus which is sensitive to and controlled by, discharge or suction pressure and which includes means of preventing overloading during start up of the compressors.

3,691,786
AIR CONDITION APPARATUS WITH REFRIGERANT SUPER COOLER
Richard M. Anderson, Nashville; Hushel L. Parrish, Jr., Culleoka, and Kenneth L. Spade, Nashville, all of Tenn., assignors to Heil-Quaker Corporation
Filed March 31, 1971, Ser. No. 129,762
Int. Cl. F25b 47/00
U.S. Cl. 62—279 10 Claims



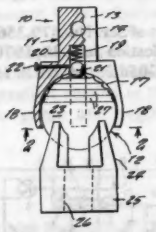
An air conditioning apparatus having an evaporator for conditioning air flowed in heat exchange relationship therewith. The evaporator is cooled by refrigerant fluid delivered thereto through an expansion means from a supply duct leading from a condenser of the refrigeration system. The refrigerant in the supply duct is supercooled by means of heat exchange relationship thereof, with condensate resulting from the condensation of the moisture in the air being conditioned by the evaporator being collected in a suitable receiver. The heat exchange relationship of the refrigerant to the condensate is such that the condensate is heated to vaporization for improved heat withdrawal from the refrigerant.

3,691,787
BEVERAGE FOUNTAIN
Alfred W. Kaufmann, 1122 Ocean Ave, Brooklyn, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,708
Int. Cl. B67d 5/62
U.S. Cl. 62—400 8 Claims



Disclosed herein is an improved beverage fountain including a hollow pedestal, a bowl supported on the pedestal and an elevated receptacle supported above the bowl for discharging a beverage into the bowl. A motor-pump combination is mounted within the hollow pedestal, and the pump is connected to receive liquid from the bowl for pumping it into the elevated receptacle. A vertically disposed sleeve extends upwardly from the bowl for supporting the receptacle at its upper end, and the sleeve has a plurality of openings in its lower portion for allowing the flow of liquid from the bowl into the sleeve. A coolant cartridge or jar is mounted within the sleeve for cooling the liquid therewithin, whereby the resultant beverage fountain recycles the cooled beverage from the bowl to the elevated receptacle in a sanitary manner, wherein the beverage comes in contact only with the internal portions of the pump, the coolant cartridge, and the beverage receiving bowl and elevated receptacle.

3,691,788
STAY-RITE FLEX JOINT
Ralph Mazziotti, 362 Park Ave., Midland Park, N.J.
Filed Sept. 10, 1970, Ser. No. 71,142
Int. Cl. F16d 3/10
U.S. Cl. 64—7 1 Claim



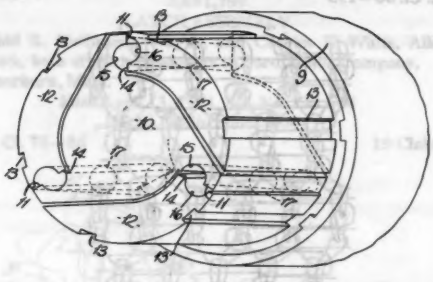
A novel universal joint which can be positioned at any angle without loss of efficiency by becoming limp at the far end of an extension secured thereto, the device including a spherical ball having a series of annular grooves therearound, the ball being integral with a pronged bushing attachable to one end of a lever, and a pronged claw being fitted around the spherical ball, the claw supporting a spring loaded detent ball urged against an annular groove of the spherical ball.

3,691,789
Patent Not Issued For This Number

3,691,790
COUPLINGS

Harry Simister, Olton, Solihull, Warwickshire, England, assignor to Joseph Lucas (Industries) Ltd., Birmingham, England

Filed May 18, 1971, Ser. No. 144,614
Int. Cl. F16d 3/06
U.S. Cl. 64—23 1 Claim

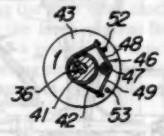


A coupling for transmitting rotary motion between two parts while permitting relative axial movement between the parts wherein one of the parts is tubular. The tubular part contains segmental portions providing a plurality of angularly spaced surfaces which lie substantially in planes which are radially disposed with respect to its axis. The other part is coaxially mounted within the tubular part and has a plurality of angularly spaced surfaces which are opposed and complementary to the surfaces on the segmental portions. Moreover, there is formed in each pair of opposed and complementary surfaces a pair of substantially semi-circular and longitudinally extending grooves which are oppositely inclined at substantially equal angles to the axis of the tubular part and a single ball is accommodated at the point of intersection of each pair of grooves; the ball having a diameter substantially equal to the diameter of the grooves.

3,691,791
SLIP-CLUTCH

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 8, 1970, Ser. No. 70,036
Claims priority, application Japan, Sept. 10, 1969, 44/73089; Jan. 27, 1970, 45/7928
Int. Cl. F16d 7/02
U.S. Cl. 64—30 E 2 Claims

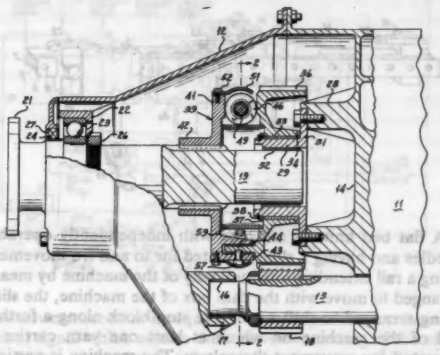


A slip-clutch for use with a tape winding-up mechanism of a tape recording and reproducing apparatus. A cylindrical drum is provided on a pulley for receiving input force of the clutch and a length of rope is wound around the drum in frictional torque transmitting sliding engagement therewith. The rope has opposite ends connected to a disc rigidly secured to an output shaft of the clutch whereby substantially constant torque is transmitted from the drum to the disc regardless of variation in coefficient of friction between the driving and driven members.

3,691,792
TORSIONALLY RESILIENT DRIVE MECHANISM

Howard R. Corwin, North Caldwell; Walter L. Hermes, Cedar Grove, and Charles Jones, Hillsdale, all of N.J., assignors to Curtiss-Wright Corporation

Filed May 18, 1971, Ser. No. 144,544
Int. Cl. F16d 3/04
U.S. Cl. 64—31 8 Claims

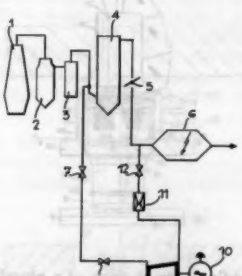


A drive mechanism between the output shaft of an engine and a parallel drive shaft, comprising a vibrationally tuned torsional system with reducing gearing resiliently coupled to the driven shaft to reduce shock load on the gear teeth and smooth out any sinusoidal component in power output from the engine, and to absorb acceleration and gyroscopic forces from the driven shaft and separation forces on the gears.

3,691,793
PLANT FOR RECOVERING ENERGY FROM EXHAUST GASES FROM A BACK-PRESSURE BLAST FURNACE

Paul Marie Georges Laval, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en Abrege "Cockerill", Seraing Lez Liege, Belgium

Filed Dec. 14, 1970, Ser. No. 97,498
Claims priority, application Belgium, Dec. 19, 1969, 42,577
Int. Cl. F02c 7/02
U.S. Cl. 60—39.5 1 Claim

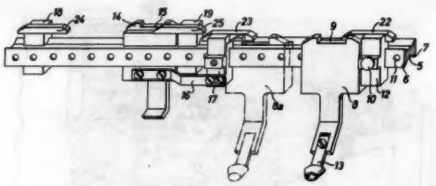


In a plant for recovering the energy of exhaust gases of a back-pressure blast-furnace there is provided a main conduit with a dust collector leaving a minimum of dust of about 4 g/m³ in said gases which are lead in a part of 85 to 90 percent by volume directly to an expansion turbine by a by-pass conduit on which is mounted a cleaner and leaving said main conduit after said dust collector and running again into said main conduit after a washer-dust precipitator and a control valve on said main conduit leading to the utilization place of said gases.

3,691,794
FLAT BED KNITTING MACHINES

Keith Jeffcoat, Nuneaton, England, assignor to Courtaulds Limited, London, England

Filed Dec. 10, 1970, Ser. No. 96,729
Claims priority, application Great Britain, Dec. 23, 1969, 62,518/69
Int. Cl. D04b 15/52
U.S. Cl. 66—126 R 6 Claims

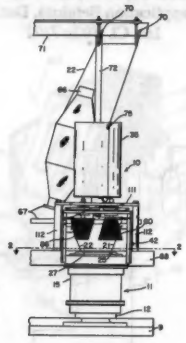


A flat bed knitting machine with independently operable needles and having a slide mounted for to and fro movement along a rail extending longitudinally of the machine by means arranged to move with the cam box of the machine, the slide being arranged to shift a movable stop block along a further rail of the machine on which at least one yarn carrier is mounted for movement therealong. The machine is particularly suitable when it is desired during one knitting sequence to knit at one time two portions of fabric at spaced locations on the beds and at another time to knit a single portion of fabric using a yarn carrier which supplies yarn for the knitting of one of the said two portions of fabric.

3,691,795
YARN FEEDING MEANS FOR CIRCULAR KNITTING MACHINES

Vincent A. Iannucci, Lincoln Park, and Ronald S. Schartel, Whitfield, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1970, Ser. No. 80,543
Int. Cl. D04b 15/48
U.S. Cl. 66—132 R 1 Claim

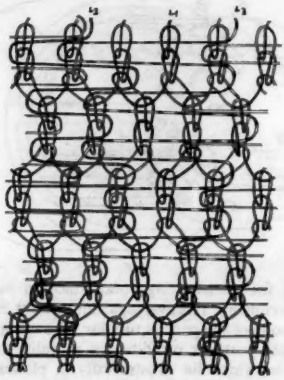


Means for feeding yarn to each of a plurality of rotatable knitting stations of a circular knitting machine, the yarn feeding means including a common member rotatable with the knitting stations, means on the common member for positively feeding the yarn associated with each knitting station from a supply source to the needles of the machine to be formed into courses of a knitted fabric, and means on the common member for guiding each yarn along a feeding path from its supply source to the positive feeding means associated therewith and from the positive feeding means to the needles without interference with the feeding path of another of the yarns.

3,691,796
KNITTED CREPE FABRIC AND METHOD OF MANUFACTURE

Karl Mayer, Bruhlstrasse 25, 6053 Obertshausen near Offenbach, Germany

Filed April 10, 1970, Ser. No. 27,404
Claims priority, application Germany, April 10, 1969, P 19 18 243.5
Int. Cl. D04b 23/08
U.S. Cl. 66—193 7 Claims

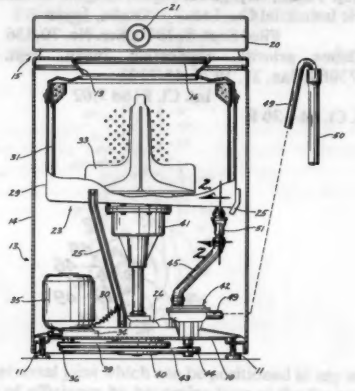


Shrinkable weft yarns are knitted into a base warp knit fabric, with adjacent weft yarns being looped about the stitches of the wales of the base fabric at staggered points in a walewise direction.

3,691,797
LIQUID CONTROL SYSTEM FOR WASHING MACHINE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed July 6, 1971, Ser. No. 159,825
Int. Cl. D06f 39/08
U.S. Cl. 68—23.4 8 Claims



A liquid control system for a washing machine having a bidirectional motor operable for effecting washing and extraction operations includes a one-way check valve in the drain conduit. The liquid control system includes a pump driven by the motor and operable for pumping toward and from a tub during the washing and extractions, respectively, with the check valve being self actuating for permitting flow from the tube during the extraction operation and preventing backflow to the tub at the conclusion of the extraction operation and

during the washing operation to effectively obviate mixing of the washing liquid with residual liquid from the previous cycle.

3,691,798

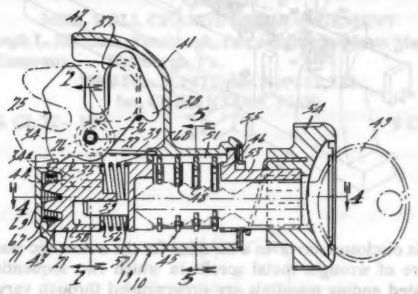
Patent Not Issued For This Number

3,691,799

LATCH ASSEMBLY

Donald R. Hoffmann, Wayne, and Charles E. White, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed April 13, 1971, Ser. No. 133,644
Int. Cl. E05b *65/06, 65/44*
U.S. Cl. 70—84 **10 Claims**



A compartment door latch mechanism comprising a housing with a cylindrical bore and a keeper engageable latch bolt externally, pivotally, mounted on the housing for swinging movement between latched and unlatched positions. A pawl and a key cylinder device are separately rotatably mounted within the housing bore. The latch bolt has a cam portion in communication with the rotary pawl through a slot in the housing. The rotary pawl also has a slot in its cylindrical surface which slot is adapted to be brought into alignment with the housing slot by appropriate rotation of the pawl by the key cylinder device. When the two slots are aligned, the latch bolt cam portion moves into the pawl slot and the latch bolt achieves unlatched position. The cam portion otherwise abuts the cylindrical surface of the pawl and the latch bolt is in latched position.

The key cylinder device has a lost motion connection with the rotary pawl. The pawl is non-responsive to rotation of the key cylinder device from a first or locked position of the latter to a second or non-locked position but then becomes responsive upon rotation beyond the second position permitting alignment of the slots and unlatching movement of the latch bolt, thereby unlatching the door latch mechanism. Upon subsequent relatching of the latch mechanism, a spring drives only the rotary pawl to a position in which its slot is out of alignment with the housing slot and the latch bolt then again becomes blocked against swinging movement.

3,691,800

Patent Not Issued For This Number

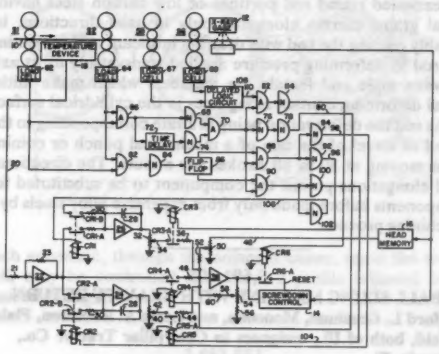
3,691,801

GAGE CONTROL SYSTEM FOR HOT ROLLING MILLS

Robert B. Gillstrom, Malvern, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 715,051, March 21, 1968, abandoned. This application April 30, 1970, Ser. No. 31,842
Int. Cl. B21b *37/10*
U.S. Cl. 72—9 **8 Claims**

Described is a workpiece gage control system for a hot rolling mill, intended for use as an adjunct to existing gage control systems, which measures the temperature of incoming end of the workpieces and compares this with the temperature of the incoming end of the previous workpiece and the gage of the forward end of the previous workpiece. Assuming that a



screwdown correction is required, this comparison results in a control signal which adjusts the screwdown setting of the mill to maintain output gage substantially constant regardless of temperature variations.

3,691,802

Patent Not Issued For This Number

3,691,803

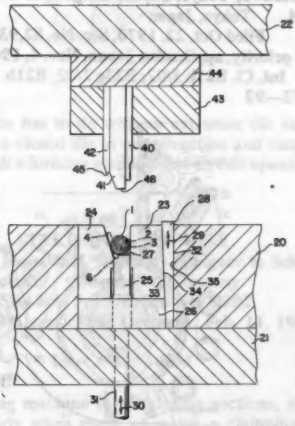
Patent Not Issued For This Number

3,691,804

COLD EXTRUDED ARTICLE AND METHOD OF MAKING THE SAME

Norbert T. Clendenin, Metamora, and Tillman L. Corum, Maumee, both of Ohio, assignors to Metal Forming and Coining Corp., Maumee, Ohio

Filed Jan. 26, 1971, Ser. No. 109,848
Int. Cl. B21c *3/18*; B21d *22/00*
U.S. Cl. 72—42 **3 Claims**



A unitary cold extruded component of disc brakes for motor vehicles having directional properties imparted by dif-

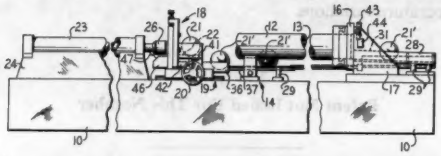
ferent directional elongations of various portions thereof, said component having a generally U shaped cross-section with diverging sides of specific thickness and shape, a downwardly extending lower lip, all with accurately aligned and dimensioned planar surface portions is formed from an accurately dimensioned round rod portions of low carbon steel having metal grains therein elongated only in axial directions, by suitably coating the rod with drawing lubricant and subjecting the rod to deforming pressure applied transversely to its axis between male and female die members which make initial metal deforming contact along lines in the cylindrical surface of the rod the deformation being at a rate corresponding to the speed of travel of the ram of a mechanical punch or coining press moving at 30 to 80 strokes per minute. The directional cold elongations permit the component to be substituted for components before made only from expensive alloy steels by a machining process.

3,691,805

BALL SIZING MACHINE WITH GRAVITY RETURN

Clifford L. Gresham, Monooka, and Lorin A. Robinson, Plainfield, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 10, 1970, Ser. No. 53,857
Int. Cl. B21b ; B21j *13/00*
U.S. Cl. 72—75 **6 Claims**



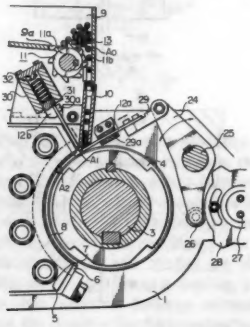
A ball sizing machine including a mounting for a tubular workpiece, a ram for projecting a ball from a starting position through the tubular workpiece, a ramp for receiving the ball after it is projected through the workpiece and permitting gravity return of the ball towards its starting position with a mechanism for receiving the ball from the ramp and relocating it at its starting position. A preferred embodiment including switches for controlling the machine during a complete operating cycle once the ball is located at its starting position.

3,691,806

THREAD ROLLING MACHINE FOR MANUFACTURING A PARTICULAR TYPE OF ROLLED THREAD

Yasuo Hanzawa, Tokyo, Japan, assignor to Okabe Company Limited, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 82,938
Claims priority, application Japan, Nov. 6, 1969, 44/105380
Int. Cl. B21h *3/02*; B23g *7/02*; B21b *1/16*
U.S. Cl. 72—92 **3 Claims**



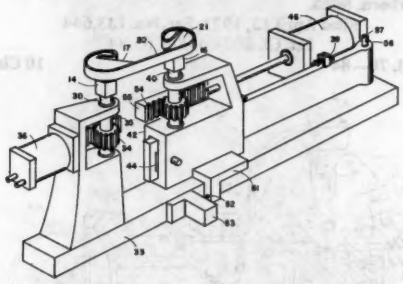
Thread rolling machine for manufacturing a rolled thread characterized by a pair of external threads formed upon a thread shaft at both end portions thereof and a pair of stopper grooves formed upon the thread shaft at adjacent inside positions of the respective external threads.

3,691,807

BENDING MACHINE

Lane Jasper, 165 N. Catalina, Pasadena, Calif., and Joseph L. Brassner, 4538 Conchita Way, Tarzana, Calif.

Filed April 28, 1970, Ser. No. 32,661
Int. Cl. B21c *47/00*; B21d *11/14*
U.S. Cl. 72—146 **16 Claims**



This disclosure involves a machine for the automatic manufacture of wrought metal scrolls in which two sequentially operated ending mandrels are programmed through varying angular rotation, directions of rotation, mandrel sizes and center-to-center distances to produce a wide variety of scroll sizes and shapes.

Disclosed is a novel slotted bending head which allows the workpiece to be drawn through one head while being wound on another head. The slotted bending form serves to guide the workpiece as a trap to hold the workpiece while initiating the second scroll formation.

Disclosed also is an improved bending head table assembly with a coaxial table raising system.

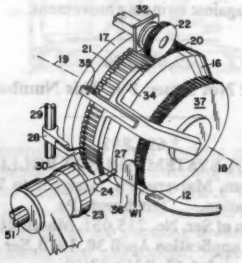
A pneumatic system including controls for automatically controlling and sequencing the operation to produce a complete double ended scroll without handling of the workpiece except loading and unloading.

3,691,808

WIRE FORMING MACHINE

Rodney K. Calvert, Dunwoody, and Dale Keith Scott, Jonesboro, both of Ga., assignors to The Mead Corporation,

Filed May 15, 1970, Ser. No. 37,631
Int. Cl. B21b *21/00*; B21d *13/02*
U.S. Cl. 72—190 **10 Claims**



A wire forming machine and method imparts an undulatory configuration to a strand of wire and includes a pair of wheels

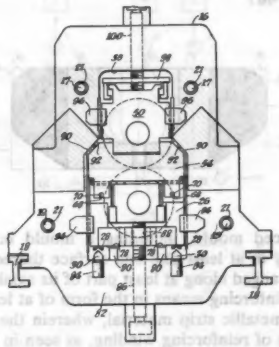
disposed alongside each other and rotatable about angularly disposed axes. Pins are disposed radially about the peripheries of both wheels. The angularly disposed wheel axes result in a variation in the spacing between the pins of one wheel and the adjacent pins on the other wheel so that wire looped about the pins is alternately tightened and loosened. Fixed wire removal and holding means are arranged so as to engage the wire at points of minimum and maximum lateral spacing respectively, an oscillatable releasing finger engages the wire following the looping thereof about one pin to release the wire from rotatable looping means, and a reciprocable plunger is arranged to engage another part of the wire to aid in securing the wire about a pin on one of the wheels.

3,691,809

MILL ROLL CHANGING ARRANGEMENT

Joseph L. Hlafcsak, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Feb. 3, 1971, Ser. No. 112,336
Int. Cl. B21b *13/08, 31/00*
U.S. Cl. 72—199 **9 Claims**



A quick-replaceable roll assembly for a rolling mill stand, said assembly comprising an inner carriage, rail engaging wheels rotatably mounted on said carriage, means for mounting a lower roll and a pair of bearing structures therefor on said carriage, said means comprising a number of balancing plungers reciprocatably mounted on said carriage and engaging said bearing structures, and means for mounting an upper roll and bearing structures therefor on said assembly in faced engagement with said lower roll.

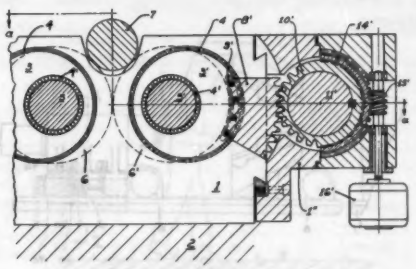
3,691,810

INDIVIDUAL ECCENTRIC CONTROL FOR MILL SCREWDOWN

Tadeusz Sendzimir, c/o T. Sendzimir, Inc. P.O. Box 1350, Waterbury, Conn.

Filed May 25, 1971, Ser. No. 146,661
Int. Cl. B21b *29/00, 31/26*
U.S. Cl. 72—242 **15 Claims**

In a beam-backed rolling mill wherein the working rolls are backed by casters mounted on eccentric shafts for screwdown purposes, there is disclosed an arrangement wherein a plurality of eccentrics are mounted at spaced intervals on a shaft, each of said eccentrics being individually operable by outside means, whereby the eccentrics may be made large enough so as not to be self-locking, and whereby the pressure exerted by



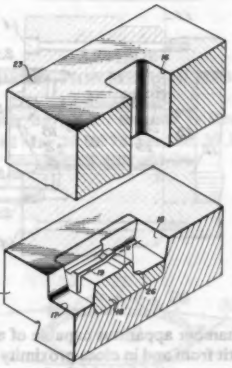
each eccentric, through the adjacent caster, upon the work roll, may be controlled and the roll profile adjusted to a desired configuration.

3,691,811

EXTRUSION DIE

George H. Heitman, Shrewsbury; Eric T. Strom, Holden, and Anthony G. Cerrone, Worcester, all of Mass., assignors to Wyman-Gordon Company, Worcester, Mass.

Filed Oct. 26, 1970, Ser. No. 83,867
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **6 Claims**



This invention has to do with an extrusion die in which a plunger enters a closed die in one direction and forces metal laterally through a forming element and an exit opening.

3,691,812

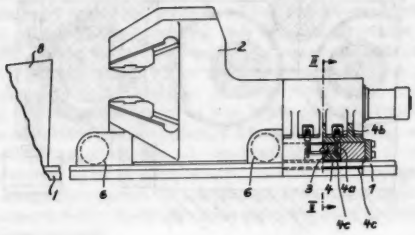
STRETCHING MACHINE

Albert Boesch, Dusseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 5, 1970, Ser. No. 8,992
Claims priority, application Germany, Feb. 11, 1969, P 19 06 646.7
Int. Cl. B21d *5/04*
U.S. Cl. 72—308 **9 Claims**

In a stretching machine for stretching sections, sheet and plate, particularly when made of metal, a clamping head is provided having at least two clamping means operable by pressure operated control means. The clamping head is slidably mounted on rails and is arranged to be clamped

thereto by engagement of the clamping means and the rails. Preferably, the clamping means are wedges arranged to engage between a housing of the clamping head and the rails. The problem of the clamping head jamming on the rails during a stretching operation may be avoided.



3,691,813

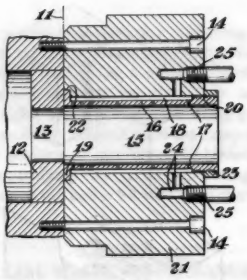
FLUID QUENCH APPARATUS

Russell E. Matthews, 4691 E. Letts Road, and George S. Foerster, 3901 Westbrier Terrance, both of Midland, Mich., Assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 19, 1970, Ser. No. 81,663

Int. Cl. B21d *22/00, 37/18*

U.S. Cl. 72—342 **9 Claims**



A quench chamber apparatus capable of applying a fluid to a form upon exit from and in close proximity to a die aperture. The quench apparatus is comprised of an open-ended quench chamber at least partially longitudinally bounded by a sleeve with a plurality of holes extending therethrough in a generally radial direction to at least one peripherally disposed spaced apart fluid distributing channel. The distributing channel is further longitudinally bounded by a backer block.

3,691,814

Patent Not Issued For This Number

3,691,815

METHOD AND APPARATUS FOR BENDING TUBING

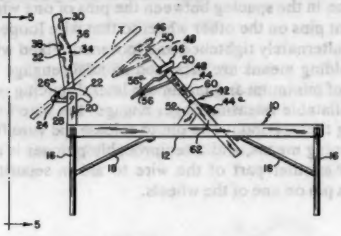
Lawrence A. Deacon, 2829 Joseph Parkway, Brunswick, Ohio

Filed July 13, 1970, Ser. No. 54,100

Int. Cl. B21j *13/08*

U.S. Cl. 72—458 **11 Claims**

A compact portable tube bender for providing predetermined offsets in the tubing and comprising a support having a tube bender shoe mounted thereon for receiving the tubing section, and having a pivotal lever with another bender shoe mounted thereon for applying pressure to the tubing for bending it into said predetermined offset configuration. An adjustable stop means is provided for indicating when the desired offset in the tubing has been accomplished.



3,691,816

MOULDS

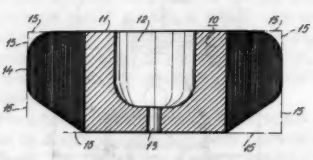
Per-Olof Strandell, Bockstigen 3, Taby, Sweden

Filed June 19, 1970, Ser. No. 47,683

Claims priority, application Sweden, June 25, 1969, 9024/69

Int. Cl. B21c *3/00*

U.S. Cl. 72—467 **3 Claims**



A reinforced mould, including a mould body having a mould cavity in at least one end surface thereof, the mould body has arranged along at least part of its axial length a pretensioned reinforcing means in the form of at least one winding of thin metallic strip material, wherein the width of the wound turns of reinforcing winding, as seen in axial section, decreases radially outwardly from the periphery of the mould body to provide a pre-tensioning force which varies along the mould body proportionally to the forces exerted therein when the mould is used.

3,691,817

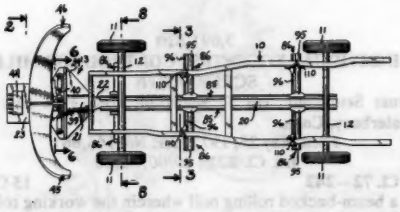
MOBILE FRAME AND BODY STRAIGHTENER

Robert P. Friend, and George R. Friend, both of 2489 Foxdale Drive, San Jose, Calif.

Filed March 6, 1970, Ser. No. 17,263

Int. Cl. B21d *1/14*; B21j *13/12*

U.S. Cl. 72—705 **1 Claim**



An elongated generally tubular body adapted for movement over a supporting surface and having a pair of generally arcu-

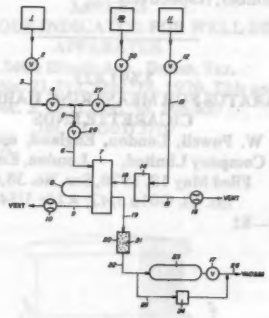
ately shaped arms affixed thereto in outwardly extending relationship for pivotal movement about an axis parallel with the longitudinal axis of the body and for pivotal movement about an axis transverse to the longitudinal axis. A plurality of adjustable support members are affixed to the body for engaging the frame to be straightened and maintain the mobile straightener immovable relative thereto. Hydraulic cylinders and chains are mounted within the body and arms so as to be connectable to a frame and the like and apply a straightening force thereto in substantially any desired direction.

3,691,818

METHOD FOR DETERMINATION OF IMPURITIES IN HELIUM GAS

David E. Emerson, Amarillo, Tex., assignor to the United States of America as represented by the Secretary of the Interior

Filed March 27, 1970, Ser. No. 23,133
Int. Cl. G01n 7/04
U.S. Cl. 73—23 1 Claim



The helium content of a gaseous mixture is determined by comparing the partial pressure of the helium in an unknown sample directly with the pressure of highly purity helium under the same conditions. The volume percent of helium in the unknown is equal to $(P_1/P_2) \times 100$, where P_1 is the partial pressure of helium in the sample and P_2 is the total pressure of an equal volume of high-purity helium.

The partial pressure of the helium in the unknown sample is initially determined by adsorption of gases other than helium on activated charcoal and measurement of the resulting helium pressure. The total pressure of high-purity helium is then measured under the same conditions as the sample.

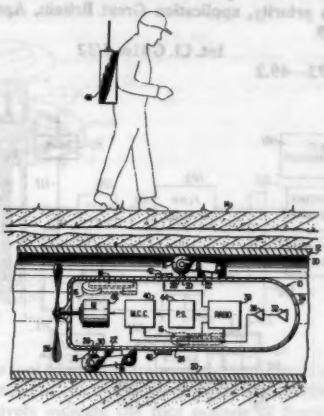
3,691,819

LEAK DETECTOR AND METHOD

Robert J. Guest, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 4, 1971, Ser. No. 103,421
Int. Cl. G01m 3/24
U.S. Cl. 73—40.5 A 18 Claims

A method and system for locating leaks in a pipeline under hydrostatic pressure by traversing the pipeline with a self-propelled pig having an acoustic leak detecting capability, stopping the pig in response to leak detection, and restarting the pig responsively to locating the pig and/or to the termination of the transient nose initially detected as a leak. A transmitter external of the pipeline is utilized to transmit an interrogation wave energy signal and the responsive wave energy



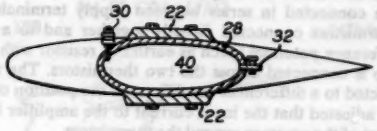
signal transmitted by the pig is synchronized therewith. Power is conserved by limiting the pig transmissions to a direct response to the interrogation signal.

3,691,820

CRACK DETECTION METHOD AND SYSTEM THEREFOR

John Fiore, Oyster Bay, N.Y., assignor to Rex Chainbelt Inc.,

Filed May 20, 1970, Ser. No. 39,137
Int. Cl. G01m 3/20
U.S. Cl. 73—40.7 20 Claims



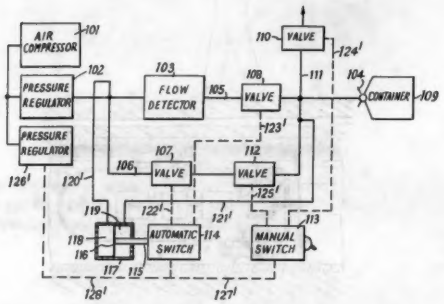
A method and system for detecting a crack in a wall of a closed hollow vessel, such as a helicopter blade, filled with a non-contaminated referee medium, such as a pure gas. Means, such as a chemical absorbent direct reading detector, are provided for detecting the presence of a contaminant, such as a gaseous impurity, in the non-contaminated referee medium, the contaminant being introduced into the referee medium upon the appearance of a crack. For composite vessels which are composed of at least two layers, or walls, held together by a bonding material, a crack in the inner wall is detected due to the presence of a gaseous contaminant, such as ammonia, outgassed from the bonding material. For detection of a crack in a wall of a vessel having only a single layer, means are provided for dynamically introducing a pressure differential on opposite sides of the wall for introducing the contaminant into the referee medium upon the appearance of the crack.

3,691,821

LEAK DETECTORS

Peter Gordon Davey, Horton-cum-Studley, England, assignor to Cosmopolitan Assurance Company Limited, Nassau, Bahamas

Filed April 1, 1970, Ser. No. 24,757
Claims priority, application Great Britain, April 3, 1969, 17644/69
Int. Cl. G01m 3/32
U.S. Cl. 73—49.2 15 Claims



The leak detector comprises a source of fluid pressure connected by a conduit with a valve to a reservoir having the same capacity and thermal-diffusion time as the container under test. The reservoir is connected to the container being tested through a flow detector. A conduit which can be selectively opened and closed by-passes the flow detector to enable the container to be brought to the test pressure quickly. When the container is at test pressure the valve between the source and the reservoir is closed to isolate the test apparatus from fluctuation of pressure in the source. Furthermore by making the reservoir of the same capacity and thermal diffusion time as the container being tested, the effects of adiabatic and isothermal changes in the reservoir and the container during testing are eliminated. The flow detector is a self-protecting flow detector. It has a by-pass conduit which is provided with a solenoid-operated valve. The solenoid is energized to open the valve by a bistable circuit when the output of the flow detector exceeds a predetermined value. The flow detector uses thermistors as flow-sensing elements. Each element comprises two thermistors forming parts of two potential dividers which are connected in series between supply terminals with the thermistors connected directly together and to a source of reference potential (such as earth). A resistor with a variable tap is connected across the two thermistors. The tap is connected to a differential amplifier and the position of the tap is so adjusted that the input current to the amplifier is independent of the pressure around the thermistors.

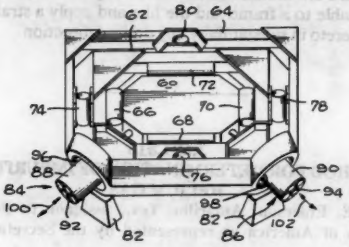
3,691,822

FLEXIBLE SUPPORT STRUCTURE FOR VIBRATION TESTING

Charles E. Deckard, Huntsville, Ala., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Aug. 3, 1970, Ser. No. 60,674
Int. Cl. G01m 7/00
U.S. Cl. 73—71.6 5 Claims

A vibration testing device for supporting items to enable them to be vibrated in three orthogonal directions and pivoted about a vertical axis while maintaining them level, or horizontal, comprising an item-supporting platform surrounded by an intermediate member which, in turn, is surrounded by an outer member. A first group of resilient thin walled cylinders support the platform on the intermediate member, all of these cylinders oriented with their axes horizontal and extending circumferentially about the platform. A second group of resilient thin-walled cylinders support the intermediate member on the outer member, these cylinders all oriented with their axes vertical. Shaking forces are transmitted to the platform through a structure which includes an inner shaft attached to the platform, a cylindrical surrounding member



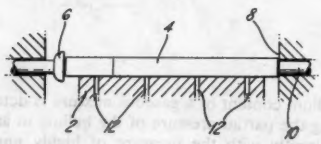
which can be driven, and a group of resilient thin-walled cylinders whose axes extend parallel to the shaft and which are attached at diametrically opposite sides to the shaft and surrounding member, respectively.

3,691,823

APPARATUS FOR MEASURING HARDNESS OF CIGARETTE ENDS

Gordon F. W. Powell, London, England, assignor to Molins Machine Company Limited, London, England

Filed May 18, 1970, Ser. No. 38,038
Int. Cl. G01n 3/42; A24c 5/343
U.S. Cl. 73—81 5 Claims



A cigarette ends testing device comprises a testing plunger which is pressed into an end of a cigarette through a bore in an end stop against which the cigarette is pressed to locate it, means such as suction means being arranged to hold the cigarette firmly in position when so located.

3,691,824

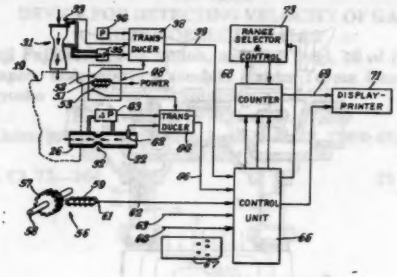
CARBURETOR EVALUATION SYSTEM

Vern C. Vanderbilt, Jr., Hagerstown; Clarence L. Zimmer, Richmond; William F. Van Ostrand, and Gerald B. Mattheis, both of Hagerstown, all of Ind., assignors to Dynamic Precision Controls Corporation, Hagerstown, Ind.

Filed June 5, 1970, Ser. No. 43,668
Int. Cl. G01m 19/00
U.S. Cl. 73—118 14 Claims

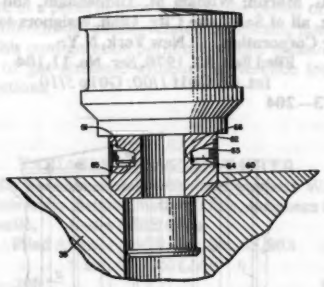
This disclosure deals with a system for evaluating the performance of a carburetor of an internal combustion engine while the engine is operating. The system measures the mass flow rate and temperature of the air entering the carburetor, the mass flow rate and temperature of the fuel entering the

carburetor, the fuel level in the float bowl of the carburetor, and the engine speed. These parameters, and/or combinations



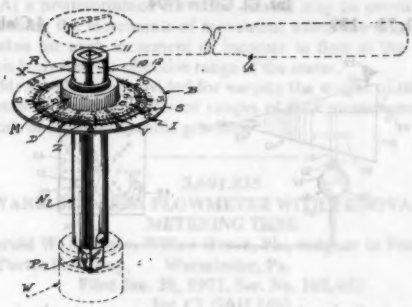
thereof, are recorded under different engine operating conditions, in order that the recorded data may be later compared with the performance of a "standard" carburetor.

3,691,825
ROTARY TORQUE INDICATOR FOR WELL DRILLING APPARATUS
Norman D. Dyer, 3400 Illinois Ave., Dallas, Tex.
Division of Ser. No. 71,712, Sept. 14, 1970. This application Dec. 3, 1971, Ser. No. 204,637
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A **3 Claims**



The device is used to indicate torque applied by the rotary table to the drill string during drilling of oil and gas wells. Intermediate adapter between the Kelly bushing and the rotary table in one embodiment has two parts. Lower part of adapter includes standard male square drive that fits into the square drive of the rotary table, and is thus rotated by the rotary table. Upper part of adapter includes female square drive arranged to receive male square drive on the Kelly. The Kelly transmits torque from adapter assembly to the drill pipe. Upper part is connected to lower part by either hydraulic cylinders or by linkage with strain gauge. The upper part rotates with lower part, but is movable relative thereto to indicate relative torque between upper and lower parts. RF transmitter connected to the hydraulic cylinder or strain gauge provides torque signal to remote RF receiver. Alternative embodiment has unitized adapter assembly. Still another alternative embodiment uses torque sensor and RF transmitter directly on Kelly drive bushing without utilization of intermediate bushing.

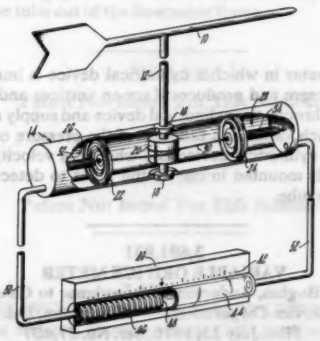
3,691,826
TORQUE INDICATING TOOL
Bosko Grabovac, P.O. Box 1685, Altadena, Calif.
Filed Aug. 25, 1970, Ser. No. 66,838
Int. Cl. G01l 5/24
U.S. Cl. 73—139 **9 Claims**



An elongate tool adapted to transmit torsional force applied to one of its ends to a piece of work engaged with its other end and to selectively indicate the foot pounds of force transmitted or to indicate when a pre-set, predetermined foot pounds of force is being transmitted. Said tool comprising a torsion rod with work force receiving and delivery means at its opposite ends and a work force indicating means responsive to torsional deflection of the rod and comprising a primary dial with a primary scale related to one end of the rod and a secondary dial with a vernier scale related to the other end of the rod and to the primary dial, one of said dials being manually adjustable relative to its related end of the rod and the other dial.

3,691,827
Patent Not Issued For This Number

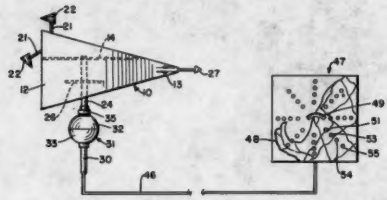
3,691,828
FLOW DIRECTION INDICATOR
Donald J. Jordan, 113 Evergreen Lane, Glastonbury, Conn.
Filed Feb. 16, 1971, Ser. No. 115,578
Int. Cl. G01p 13/02
U.S. Cl. 73—188 **4 Claims**



Apparatus for sensing and penumatically indicating the direction of flow of a fluid relative to a pre-determined axis. The apparatus comprises a combination of a mechanical device which senses the direction of flow and produces a pressure unbalance commensurate therewith and a pneumatic in-

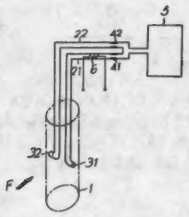
dicator device including a bellows which moves in response to the pressure unbalance.

3,691,829
WEATHER VANE ANOMOMETER
Frederic F. Perry, 105 B Pleasant, Melrose, Mass.
Filed June 12, 1970, Ser. No. 45,666
Int. Cl. G01w 1/04
U.S. Cl. 73—189 **4 Claims**



There is disclosed a weather vane anomometer having a self-contained source of electrical power and means associated therewith for indicating on a map wind and storm direction.

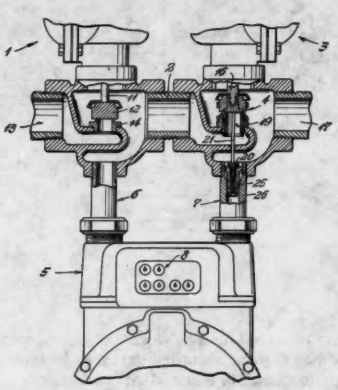
3,691,830
CURRENT METER OR FLOW METER
Miyaji Tomota; Yutaka Ishikawa; Hiroo Yamasaki, and Yoshio Kurita, all of Tokyo, Japan, assignors to Kabushikikaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.), Tokyo, Japan
Filed July 7, 1970, Ser. No. 52,967
Claims priority, application Japan, July 18, 1969, 45/56885; Jan. 30, 1970, 45/8198; Jan. 30, 1970, 45/8197; Jan. 30, 1970, 45/8195
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B **15 Claims**



A flow meter in which a cylindrical device is immersed in the fluid stream and produces Karman vortices and in which tubes pass through the cylindrical device and supply a quantity of fluid which varies as a function of the pressure on the surface of the cylindrical device and wherein a velocity measuring means is mounted in one of the tubes to detect the flow through the tube.

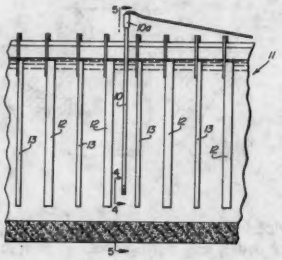
3,691,831
VARIABLE ORIFICE METER
George C. Hughes, Anderson, Ind., assignor to Columbia Gas System Service Corporation, Wilmington, Del.
Filed July 23, 1970, Ser. No. 57,457
Int. Cl. G01f 5/00; F17d 1/04
U.S. Cl. 73—203 **5 Claims**

Variable orifice meter assembly for determining the total volume of gas flowing through the assembly by measuring only a portion thereof, comprising a positive displacement meter associated with a first stage input regulator and a second stage output regulator. The regulators are directly connected for gas flow therebetween and are also connected to the meter for gas flow from the input regulator through the meter to the output regulator. The output regulator is provided with a valve assembly comprising a secondary valve connected to a main valve, the main valve controlling the direct flow of gas from



the input regulator to the output regulator and the secondary valve controlling the flow of gas through the meter. Both valves are mechanically activated for simultaneous unitary operation. The meter is activated by the portion of the total gas flowing therethrough but is calibrated so as to record the total flow of gas through the assembly.

3,691,832
METHOD OF ANALYZING CIRCULATION OF ELECTROLYTE IN ELECTROREFINING CELLS
Richard G. Martin; William M. Tuddenham, and Joseph M. Lebrizz, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,104
Int. Cl. G01f 1/00; G01p 5/10
U.S. Cl. 73—204 **1 Claim**



Electrolyte flow patterns in an electrolytic cell utilizing anodes and cathodes of plate formation, particularly an electrorefining cell such as is utilized for producing pure cathode copper from fire-refined, impure, blister copper anodes, are determined electrically by taking flow-indicating measurements and temperature-indicating measurements simultaneously and in proximity to each other at selected locations within the cell. Sets of measurements taken at predetermined locations between and surrounding selected anode-cathode pairs are employed to produce corresponding rate-of-flow contour charts depicting relative rates of electrolyte flow at the respective predetermined locations within the respective selected areas. The apparatus employed includes a slender probe, that carries a heated flowrate-sensing thermistor and

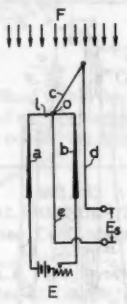
an unheated temperature-compensating thermistor in closely spaced relationship at its tip, and Wheatstone bridge circuitry with read-out instrumentation.

3,691,833

DEVICE FOR DETECTING VELOCITY OF GAS THERMOELECTRICALLY

Kenji Fujikake; Norio Mutoh, and Yuji Yagi, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho

Filed Aug. 26, 1970, Ser. No. 67,030
Claims priority, application Japan, Feb. 28, 1969, 43/17556
Int. Cl. G01f 1/00
U.S. Cl. 73—204 19 Claims



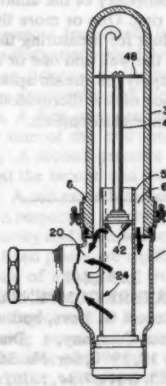
The miniaturized device for detecting velocity of gas thermoelectrically has a heating wire supported by a pair of metal rods and extending thereacross and two thermocouples of chromel-alumel bimetallics which have one wire common to both such wire having one end conductively connected to the heating wire at a point near or equal to the center of the heating wire. Different but closely related connecting junctions are possible. This configuration permits accurate measurement of the speed of gas streams, without interference from e.m.f. signal distortions.

3,691,834

VARIABLE AREA FLOW METER

Robert J. De Fasselle, Gates Mills, and Herbert W. Heisterkamp, University Heights, both of Ohio, assignors to Robert J. de Fasselle, Gates Mills, Ohio

Filed Aug. 21, 1970, Ser. No. 65,903
Int. Cl. G01f 1/00
U.S. Cl. 73—208 13 Claims



A variable area flow meter having a large range of flow measurement. The meter includes a body portion having inlet and outlet ends. An elongated upright core tube within the body portion receives the flow from the inlet end and is provided with at least one longitudinally extending slot by which the flow is transmitted to the outlet end. A float piston confined by the core tube rises in the tube to expose a greater area of the tube slot or slots as the flow increases, the piston being connected to a suitable indicator.

At a predetermined elevation, means may be provided for reducing the increments of movement which the float piston makes for each increment of increase in flow in the meter. This increases the effective range of the meter.

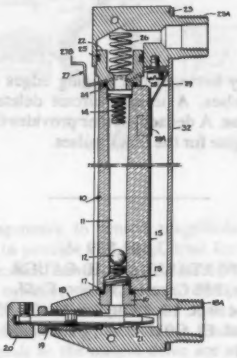
Means also are provided for varying the weight of the float piston to establish different ranges of flow measurement for fluids of different specific gravities.

3,691,835

VARIABLE-AREA FLOWMETER WITH REMOVABLE METERING TUBE

Harold W. Metzger, Willow Grove, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Jan. 20, 1971, Ser. No. 108,053
Int. Cl. G01f 1/00
U.S. Cl. 73—209 8 Claims



A flowmeter of the rotameter type in which a variable-area meter tube is supported between the fittings of inlet and outlet assemblies. In order to make possible removal of the tube for cleaning, repair or replacement purposes, the fitting on the outlet assembly is provided with a retractable adapter which normally engages the top end of the tube and which may be fitted out of engagement therewith to permit an ejector spring to push the tube out of the flowmeter frame.

3,691,836

Patent Not Issued For This Number

3,691,837

Patent Not Issued For This Number

3,691,838

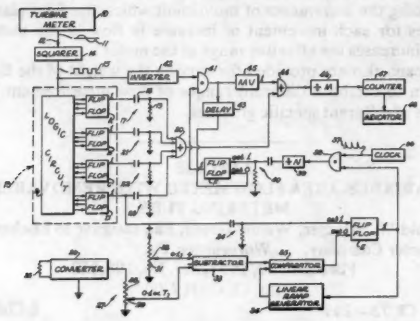
PULSE SYSTEM AND COMPONENTS THEREOF

Paul Zoltan Kalotay, Monterey Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,898
Int. Cl. G01f 1/04
U.S. Cl. 73—231 M 17 Claims

A total mass flowmeter which employs a conventional flowmeter turbine to produce output pulses at a rate directly pro-

portional to the volume flow rate. A number of different, constant frequency clock pulses are then transmitted to a frequency divider periodically, the said number being directly proportional to density. The divider output pulses are then stored and



inserted half way between the leading edges of the turbine meter output pulses. A unique circuit deletes every tenth meter output pulse. A decade divider provides this output with a synchronizing gate for the clock pulses.

3,691,839

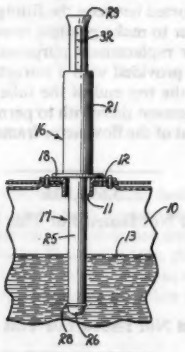
PORTABLE FLUID GAUGE

George D. Lasher, 858 Carmen, Fresno, Calif.

Filed Sept. 10, 1970, Ser. No. 70,999

Int. Cl. G01f *23/06*; F16l *47/00*

U.S. Cl. 73—322 **1 Claim**



A portable gauge for measuring the fluid contents of a container having an opening circumscribed by a substantially horizontal wall portion, said gauge having a base adapted to rest on said wall portion, a transparent tubular float extended through the base for free elevational movement with respect thereto, and a scale extended longitudinally of the float adjacent to the base for visual comparison therewith, the scale being calibrated in terms of the volumetric contents of the container at various fluid levels therein.

3,691,840

TEMPERATURE-MEASURING DEVICE

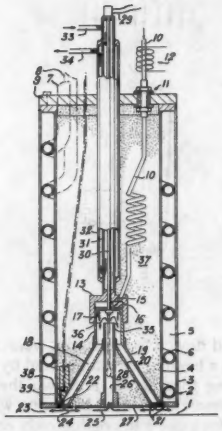
Jacques Dufour, 30, rue Guersant, 75 Paris 17eme; Paul H. Perroud, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble; Jacques Petres, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble, and Jean Rebiere, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble, all of France

Filed Jan. 19, 1971, Ser. No. 107,703

Claims priority, application France, Jan. 22, 1970, 7002211; May 29, 1970, 7019830

Int. Cl. G01k *1/16*

U.S. Cl. 73—349 **6 Claims**



In a device for measuring the temperature of a wall, a gas is fed at a given pressure and flow rate into a collector having an annular end-plate provided with passageways, there being formed between the end-plate and the wall a narrow space in which a fraction of the gas injected through the passageways is heated in contact with the wall. A suction duct is located in the axis of the supply pipe for recirculating said gas fraction. The remainder of the injected gas is continuously driven outwards over the entire periphery of the annular end-plate and forms a gaseous guard ring. One or more thermocouples are placed in the suction duct for measuring the temperature of the gas in contact with the wall and one or more thermocouples are placed in the supply gas stream upstream of the annular end-plate, the function of said thermocouples being to permit direct and differential measurements.

3,691,841

TEMPERATURE COMPENSATOR

Paul Lorenzino, and Robert G. Love, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

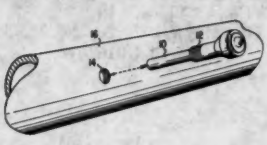
Filed May 12, 1970, Ser. No. 36,629

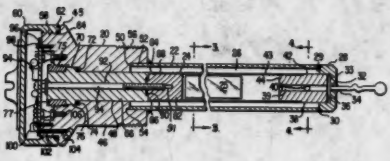
Int. Cl. G01k *7/34, 13/02*

U.S. Cl. 73—326 R **16 Claims**

A constant plate area and spacing capacitance temperature probe for insertion into a fluid stream which is non-responsive

to changes in pressure or content of the fluid investigated. Means for accommodating temperature induced changes in





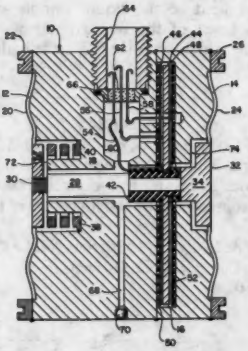
the dielectric fluid confined within the probe are provided internally of the interior of two concentric electrodes, the outermost of which serves to confine the dielectric fluid.

3,691,842

DIFFERENTIAL PRESSURE TRANSDUCER

Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Sept. 8, 1970, Ser. No. 70,184
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C **2 Claims**



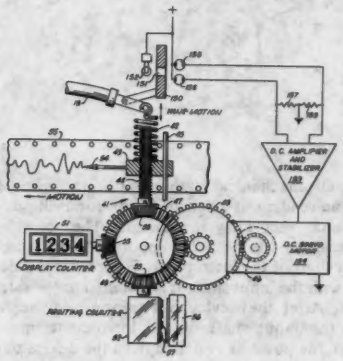
A differential pressure transducer is disclosed. The transducer includes a substantially rigid housing having two opposed end faces, an internal cavity parallel to the two end faces, and a passage passing through the cavity and connecting the two end faces. A first pressure responsive diaphragm is disposed adjacent one of the end faces and sealed thereto along its periphery. A second pressure responsive diaphragm is disposed adjacent the second end face and is sealed thereto along its periphery. A rod extends through the passage and engages at each end a respective diaphragm. A movable plate is positioned in the cavity and attached to the rod so as to move with the rod. Two fixed plates are rigidly mounted in the cavity, one on each side of and spaced from the movable plate. Means are provided for connecting the three plates into a capacitance measuring circuit so that when the rod moves in response to differing pressures being sensed by the two diaphragms, the movable plate moves toward one fixed plate and away from the other, whereby a difference in capacitance between one fixed plate and the movable plate and the other fixed plate and the movable plate occurs which is a measure of the pressure differential being sensed by the diaphragms.

3,691,843

CONDITION RESPONSIVE APPARATUS

Joseph E. Gorgens, Trumbull; William A. Heske, Fairfield, and Randall Goff, Weston, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 859,246, Sept. 17, 1969, abandoned, which is a continuation of Ser. No. 732,472, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 565,857, July 18, 1966, abandoned. This application Sept. 11, 1970, Ser. No. 71,420
Int. Cl. G01l 7/04
U.S. Cl. 73—411 **33 Claims**



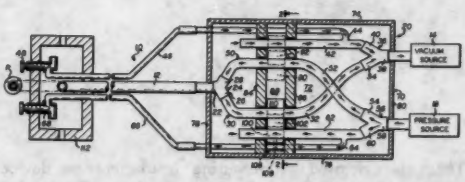
Apparatus responsive to sensed magnitude of a variable condition input to provide an output drive for operative connection to a recorder, counter, or the like. The apparatus includes a control operative in response to condition changes by discreet bidirectional movement from a force balance null position at which sensing means for emitting correlated bidirectional signals to the output drive are at a nonemitting signal level.

3,691,844

FLOW CONTROL APPARATUS

Alan D. Moore, 61-61 Woodhaven Blvd., Rego Park, N.Y.

Filed June 4, 1971, Ser. No. 149,989
Int. Cl. B01l 3/02
U.S. Cl. 73—425.6 **5 Claims**



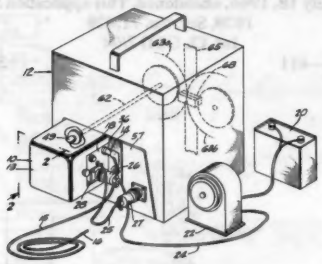
An apparatus for controlling the flow of liquid into and out of a transfer vessel comprises a vacuum source and a pressure source, both connected by branched flexible tubing to the transfer vessel and the atmosphere, with a bleeder control valve provided to adjust vacuum or pressure in each respective connecting line, and a pair of clamping members to be opened or closed selectively, resulting in either the aspiration of liquid into, or the expulsion of liquid from, the transfer vessel at an adjustably controlled rate as desired.

3,691,845

DATA MONITORING SERVO

Duane A. Ladine, 9325 Vanalden, Northridge, Calif.

Filed Dec. 18, 1970, Ser. No. 99,458
Int. Cl. G01r 5/02, 5/12
U.S. Cl. 73—432 A 6 Claims



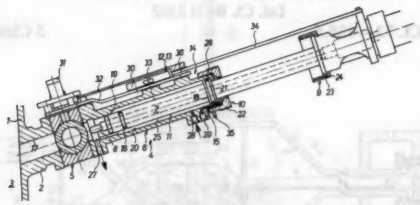
An electromechanical data monitoring device for transmitting the reading of a sensor to the rotary input shaft of a conventional recording instrument. The data monitoring device is adapted to be fully supported by its attachment on the input shaft of the instrument. To prevent the device from rotating with the input shaft, it is fastened to the side of the instrument. After the device has transmitted the reading by rotating the input shaft of the instrument in accordance therewith, the power is switched from the device to the power input of the instrument to enable the latter to make a permanent record of the reading.

3,691,846

MEASURING INSTRUMENT EQUIPPED WITH REMOVABLE MEASURED VALUE TRANSMITTER PROBE

Werner Ingold, Uitikon, Switzerland, assignor to Proton AG, Zug, Switzerland

Filed Feb. 3, 1971, Ser. No. 112,149
Claims priority, application Switzerland, Dec. 14, 1970, 18479/70
Int. Cl. G01d 21/00
U.S. Cl. 73—432 R 27 Claims



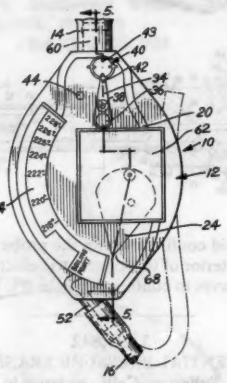
There is disclosed a measuring instrument or device equipped with a removable measured value transmitter probe, the instrument being arranged at a "receptacle", as such term is defined herein, and the probe in its operating position communicating via an opening with the interior of such receptacle. According to the invention the measuring device embodies a shut-off element which can be connected at the receptacle, and at the side of the shut-off element facing away from the receptacle there bears a guide mechanism for supporting and guiding a probe which can move from a probe inserted position where the front end of the probe is arranged in front of the shut-off element into a probe operating position wherein the probe extends through the shut-off element.

3,691,847

HYDROMETER

Alan G. Walliskog, Prospect Heights, Ill., assignor to E. Edelmann & Co., Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,856
Int. Cl. G01n 9/14
U.S. Cl. 73—441 5 Claims



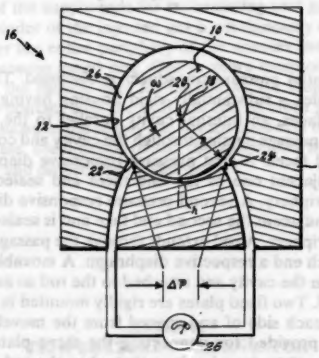
A device for testing the specific gravity of a sample of liquid. The device has body means which define a float chamber having a pivotally mounted specific gravity float therein. Laterally enlarge flange means are provided along the upright edges of the body means to insulate the operator's hand from the heat of the liquid sample within the float chamber. The force of the liquid entering the chamber is directed against an internal baffle to still the liquid in the chamber.

3,691,848

FLUID ROTARY SPEED SENSOR

Werner H. Egli, Minneapolis, and Donald J. Erickson, New Brighton, both of Minn., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 10, 1970, Ser. No. 53,729
Int. Cl. G01p 3/28
U.S. Cl. 73—502 1 Claim



A fluid rotary speed sensor having a concave cylindrical surface placed in close proximity to a rotating shaft and with a slight eccentricity so that the clearance between the shaft and the concave cylindrical surface varies as a function of circumferential angle. Hydrodynamic pumping causes a differential

pressure between two suitably located taps in the concave surface. This differential pressure is proportional to the shaft speed.

3,691,849

Patent Not Issued For This Number

3,691,850

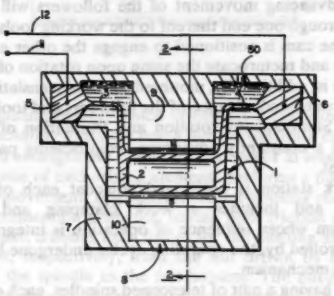
HIGH SENSITIVITY ACCELEROMETER

John M. Slater, Fullerton, and Doyle E. Wilcox, Hacienda Heights, both of Calif., assignors to North American Rockwell Corporation

Division of Ser. No. 664,496, Aug. 30, 1967, Pat. No. 3,564,928. This application Feb. 24, 1970, Ser. No. 15,971

Int. Cl. G01p *15/08*

U.S. Cl. 73—516 R 7 Claims



A accelerometer for extraterrestrial craft which can be tested on earth by being isolated from gravity is constructed having a movable proof mass member which is either a hollow metalized conductor loop suspended by filaments, or a hollow sphere of ferromagnetic material. In either case, the net density of the proof mass member is such as to permit substantially complete flotation of the proof mass in water maintained at the temperature of maximum density. The proof mass is then immersed in the water so as to attenuate gravity to any desired degree. The instrument may then be tested in known ways in the laboratory, and the water removed before the accelerometer goes into service in the craft. The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Air Force.

3,691,851

Patent Not Issued For This Number

3,691,852

GYRO ARRANGEMENT

Bo Hans Gunnar Ljung, Canoga Park, Calif., assignor to A G A Aktiebolag, Lidingo, Sweden

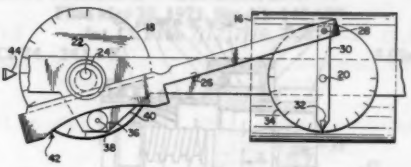
Filed Nov. 7, 1969, Ser. No. 874,804

Claims priority, application Sweden, Nov. 7, 1968, 15060/68

Int. Cl. G01c *19/32*

U.S. Cl. 74—5 4 Claims

A gyro arrangement includes a gyro housing mounted for rotation about a first axis and an indicator device mounted for rotation about a second, parallel axis, the gyro housing and the indicator device also being mounted for rotation in common about a further axis perpendicular to the first and second axes. A pinion connected to the indicator shaft engages a rack



pivoted about the free end of an arm connected to the housing shaft to provide rotation of the indicator device responsive to rotation of the gyro housing.

3,691,853

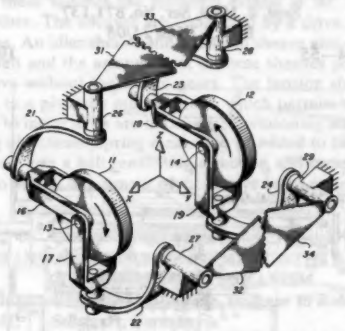
TORQUE GENERATOR

Loren E. Curriston, La Habra, and Alden P. Perry, Cypress, both of Calif., assignors to North American Rockwell Corporation

Filed July 27, 1970, Ser. No. 58,374

Int. Cl. G01c *19/02*

U.S. Cl. 74—5.34 5 Claims



The features and advantages of a singe-degree of freedom-type of control-movement gyros have been retained within a system having only one pair of rotors by mounting them on a frame to normally rotate about parallel axes and counter to each other, each spin axis is mounted so that the axis can be rotated simultaneously within two mutually perpendicular planes to provide angular momentum to the frame on any axis that lies in a plane perpendicular to the normal position of the spin axes.

3,691,854

STARTER DRIVE FOR COMBUSTION ENGINES

Otto Barthruff, Stuttgart, and Walter Ruhle, Korntal, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 31, 1970, Ser. No. 103,134

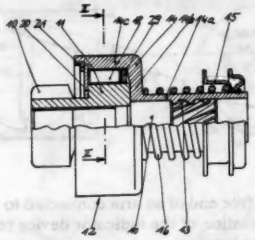
Claims priority, application Germany, Jan. 19, 1970, P 20 02 074.0

Int. Cl. F02n *15/00*

U.S. Cl. 74—6 8 Claims

A pinion is provided, and a drive-transmitting hollow shaft. An outer element is annular and concentric to the shaft, having a flange connected therewith. An inner annular element is surrounded by the outer element and connected with the pinion, and a plurality of curved cam tracks on the inner circumference of the outer element are angularly offset about and eccentric to the axis of the same, defining with the inner body confined spaces which converge in circumferential direction. An annular disc is stationarily received between

these elements and provided with axial projections each having a surface elongated in circumferential direction, and rolling bodies are accommodated in the confined spaces. Pressure springs are also accommodated in the respective confined spaces abutting and guided by the surfaces and also abutting against the rolling bodies, urging the latter circumferentially in the direction of convergence of the spaces.



3,691,855

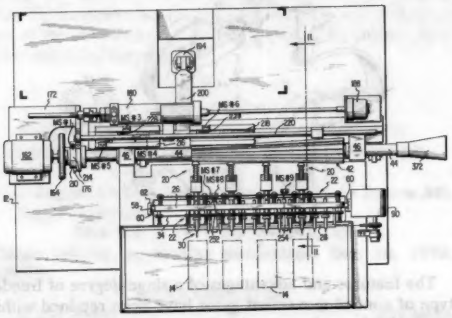
CONE CAM ASSEMBLY

John A. Cupler, II, 10 Cupler Drive, LaVale, Cumberland, Md.

Division of Ser. No. 715,711, March 25, 1968. This application Sept. 4, 1969, Ser. No. 871,137

Int. Cl. F16h *25/08*

U.S. Cl. 74—55 **10 Claims**



The disclosure introduces a new concept in machining; that of the non-captive tool. A non-captive tool is herein defined as one which may undergo bodily movement, transversely of its own axis, relative to both the tool bearing structure which supports the tool in working position and a tool support structure which supports the tool in a non-working position adjacent the bearing structure. The non-captive tool is unrestrained against the aforesaid bodily movement except during that time the tool is actually working and, while working, the restraint imposed is due to engagement with the tool driving means. Accordingly, removal of the tool driving means from engagement with the tool frees the same for bodily movement which movement may, advantageously, be integrated with the movement of the tool driving means out of engagement with the tool.

The disclosure is directed to methods and apparatus for automatically interchanging a plurality of non-captive rotary tools between working and non-working positions; for effecting tool interchange concomitantly with respective engagement and disengagement of working and non-working tools with a constantly driven input; for effecting infinitely variable infeed of the working tools; for automatically positioning a workpiece in accordance with pre-programmed operating cycles controlling a tool changer; for performing machining operations with a tool having a compound rotary input; and for transmitting a programmed cycle of operation from a master machining console to a plurality of slave machining centers.

The working and non-working tools in accordance with a first aspect of the invention relating to a tool changer are non-captively supported, in a horizontal position, on Vee bearings and a tool support rack, respectively. The tools are mounted on spindles which are adapted to be supported adjacent their outer ends on the support rack and at an intermediate portion thereof on the bearings. The bearings are of the Vee type and provide non-captive support for the tool spindles supported thereon to permit both rotary and reciprocating movement of the tools. Relative vertical movement between the rack and bearings results in an interchange of tools therebetween by virtue of the tools being lifted from either the bearings or the rack, depending on the direction of vertical movement.

At least one flexible driving member is constantly recirculated adjacent the bearings and is mounted for vertical movement with the tool support rack for movement into and out of driving engagement with the working tools simultaneously with the aforementioned tool interchanging operation.

A linearly reciprocable cam follower is mounted adjacent each tool bearing in coaxial alignment with that end of the tool spindle remote from the working end; whereby reciprocating and/or advancing movement of the followers will be transmitted through one end thereof to the working tools. An elongated cone cam is positioned to engage the other ends of the followers and reciprocate the same upon rotation of the cone. The cone is, additionally, mounted for axial translation to provide for controlled advance of the followers and tools engaged thereby. Simultaneous rotation and translation of the cone results in a constantly advancing reciprocating path of tool movement.

A work station is positioned adjacent each of the Vee bearings and includes a work clamping and indexing mechanism whose sequence of operation is integrated with, and controlled by, the operating cycles undergone by the tool changing mechanism.

A tool having a pair of telescoped spindles, each of which is adapted to receive a separate rotary input, is provided for use in certain special machining operations.

A second cone cam is mounted outside the confines of the tool changing mechanism for reciprocating one or a plurality of followers comprising the input to a closed hydraulic slave system whose output is adapted to actuate additional tools.

3,691,856

Patent Not Issued For This Number

3,691,857

GUIDE MEANS

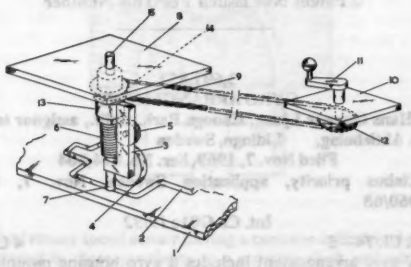
John Cooper, West Bridgford, England, assignor to Matratex Engineers Limited, Isle of Man, England

Filed July 14, 1970, Ser. No. 54,687

Claims priority, application Great Britain, July 18, 1969, 36,202/69

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **1 Claim**



A guide means which provides patterning apparatus particularly for use with sewing machines comprising a board

with pattern markings thereon and a follower for said pattern and means for driving said follower relative to said pattern.

3,691,858

ELECTROMOTIVE ADJUSTING DEVICE

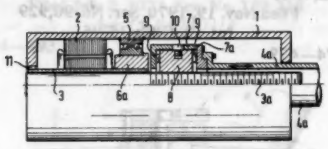
Richard Wilke, Schwelmerstrasse 51, 583 Schwelm, Germany

Filed Oct. 12, 1970, Ser. No. 79,812

Claims priority, application Germany, Oct. 10, 1969, P 19 51 181.6

Int. Cl. F16h 27/02

U.S. Cl. 74—89.15 8 Claims



An adjusting device, which comprises a reversible driving motor, including a spindle and a nut to constitute driving elements. An arrangement driven by said motor at least directly, whereby one of said driving elements performs a pushing and a pulling movement, respectively. A nut-housing receives the nut and connection elements, having poor friction and being non-resilient, transfer axial forces for the pushing and pulling movement, respectively, from the nut driven by either the motor or the spindle to the nut-housing. The nut-housing is rigidly connected with the driving motor and with a push-pull tube, respectively.

3,691,859

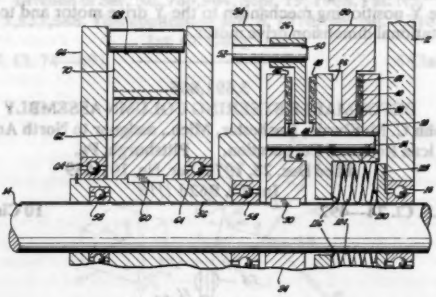
INTERMITTENT DRIVE STRUCTURE

Charles L. Peters, Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed Sept. 1, 1970, Ser. No. 68,617

Int. Cl. F16h 29/20; F16d 71/00, 67/02

U.S. Cl. 74—120 8 Claims



An intermittent drive structure for driving a driven shaft employing a clutch can be constructed utilizing a means for transmitting motion to the clutch so as to cause rotation of the driven shaft and a drive means for causing oscillation of the means for transmitting motion. Such a structure employs means for opening the clutch at one extreme of the oscillation caused by the drive means and for closing the structure at the other extreme of the drive means.

3,691,860

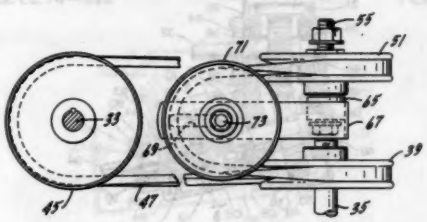
SNOW BLOWER DRIVE

Walter W. Danuser, Claremore, Okla., assignor to Danuser Machine Works, Inc., Claremore, Okla.

Filed May 21, 1971, Ser. No. 145,687

Int. Cl. F16h 7/12, 7/10, 7/00

U.S. Cl. 74—242.1 R 5 Claims



A drive for a snow blower of the type which is detachably mounted on a tractor. The drive includes an input drive sheave which connects to the tractor and an output drive sheave which drives the snow blower auger. The shafts on which these sheaves are mounted extend at 90° relative to each other. The sheaves are connected by a drive belt of the vee type. An idler sheave and a tension sheave also engage the drive belt and the arrangement of these sheaves provides the 90° drive without the use of gears. The tension sheave is attached to a pivotally mounted arm which permits the tension sheave to move in an arc in drive belt tensioning and non-tensioning directions. Spring means are provided to bias the tension sheave in a belt tensioning direction and means are provided to permit adjustment of the sheave on its mounting arm.

3,691,861

TRANSMISSION ARRANGEMENT WITH BASIC TRANSMISSION MECHANISM

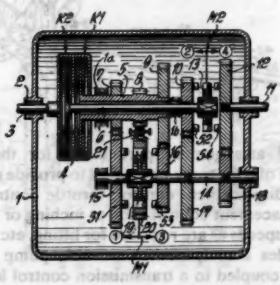
Hans Sturmer, Stuttgart, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

Filed March 4, 1968, Ser. No. 710,060

Claims priority, application Germany, March 3, 1967, B 91449

Int. Cl. F16h 3/08

U.S. Cl. 74—330 7 Claims



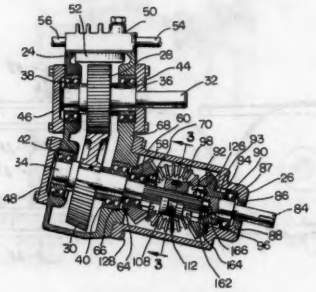
A basic multistage constant mesh transmission mechanism can be used in an automatic transmission by providing a first input unit with two input shafts and a main clutch for connecting the same selectively to a drive shaft, and in a manual transmission by using a second input unit with a single input shaft and a standard clutch so that the cost of the basic transmission mechanism can be reduced by mass production.

3,691,862

TRANSMISSION

Henry T. Halibrand, 6469 Nancy St., Los Angeles, Calif.

Filed Nov. 15, 1968, Ser. No. 776,068
Int. Cl. F16h *3/14*
U.S. Cl. 74—379 **8 Claims**



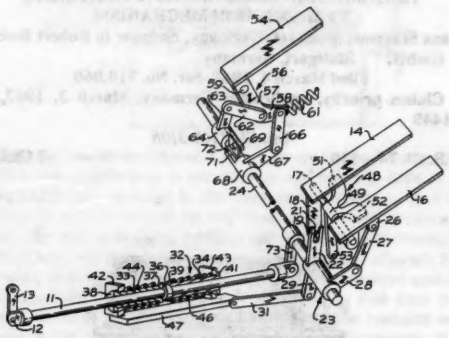
A transmission, such as the V-type marine transmissions, having a drive shaft at least partially supported by a driven shaft within a gear box having a freely rotatable drive gear, an idler gear and a driven gear operatively arranged with a coupler on the drive shaft to be normally stationary in a neutral position of the coupler co-rotative in another and counter-rotative in still another position of the coupler.

3,691,863

CONTROL FOR HYDROSTATIC TRANSMISSION

Walter M. Shaffer, Chesterland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Filed April 28, 1971, Ser. No. 138,100
Int. Cl. G05g *9/00*
U.S. Cl. 74—478 **17 Claims**



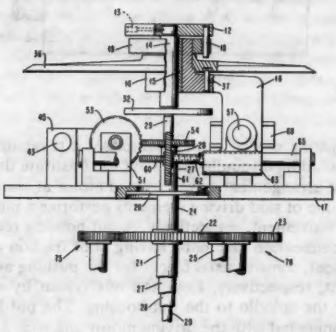
A control arrangement particularly for the hydrostatic transmission of a lift truck or the like to provide direction control, pump displacement control, throttle control, as well as special displacement control such as inching or creeping with high engine speeds as are required for lifting, etc. The arrangement includes a reciprocably movable pump displacement control rod coupled to a transmission control lever rotatable from a neutral position to forward and reverse pump displacement positions responsive to translation of the rod in opposite directions. Forward and reverse control linkage means are coupled to the rod by means of spring loaded sliders preloaded to a force above that required for the rod to move the transmission control lever through its full travel in both the forward and reverse directions in response to reciprocal rod movement effected by the control linkage means. A throttle control linkage is operably associated with the forward and reverse control linkage means to open the throttle in accordance with the extent of actuation of the latter control linkage means in either the forward or reverse direction. In addition, override control linkage means are coupled to the rod to override the loading force of the sliders and cause the rod to move the transmission control lever towards its neutral position irrespective of actuation of the forward and reverse control linkage means.

3,691,864

X-Y ROTATIONAL POSITIONING SYSTEM

Thomas J. Cochran, La Grangeville; Herbert K. Hazel, and William G. Rance, Jr., both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1970, Ser. No. 90,929
Int. Cl. G05g *15/06*
U.S. Cl. 74—479 **5 Claims**



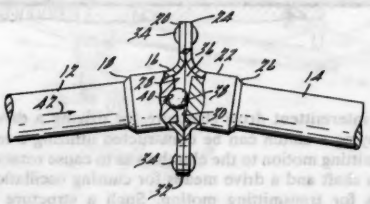
An improved system is provided for positioning a circuit board with respect to wire handling and bonding apparatus. The board is movable in an X-Y plane, can be raised or lowered along a Z dimension axis, and can be rotated about the Z dimension axis. Separate X, Y, Z, and rotational dimension electric motors are mounted on a stationary base. A differential mechanism couples an X positioning mechanism to respond to the difference between the X dimension motor position and the rotational dimension motor position. The differential mechanism prevents changes in the rotational position of the X positioning mechanism from affecting the X dimension position. A similar differential mechanism couples the Y positioning mechanism to the Y drive motor and to the rotational dimension drive motor.

3,691,865

DEFORMABLE STEERING COLUMN ASSEMBLY

John C. McElwain, Rochester, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 28, 1970, Ser. No. 101,659
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **10 Claims**



A motor vehicle steering column assembly having at least two distinct shaft elements interconnected by a flexible

coupling. The coupling includes a pair of deformable members, each secured to an end of one of two shaft elements, so that the shaft elements normally are held in an end to end, spaced apart relationship along a common axis. The coupling further includes an axial instability prompting, arcuate element positioned between the adjacent shaft element ends and causing the coupled shaft element ends to become laterally displaced while remaining coupled upon an axially compressive load sufficient to deform the coupling elements being applied to the assembly.

3,691,866

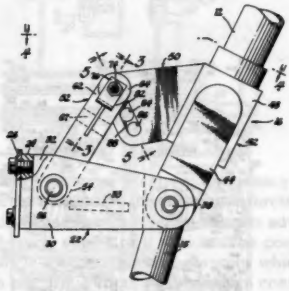
TILT STEERING WHEEL MECHANISM

Benjamin L. Berkes, Sagamore Hills, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 2, 1971, Ser. No. 159,230

Int. Cl. B62d 1/18

U.S. Cl. 74—493 **3 Claims**



A tilt steering wheel mechanism having a column, the lower end of which is connected to an adjuster mechanism having a guide plate and a lock pin cooperating with the guide plate permitting the column to be pivoted to predetermined points about a horizontal axis for maintaining the wheel in an adjusted position.

3,691,867

CONTROL DEVICES

Norman Francis Bradshaw, Goldthrope, near Rotherman, England, assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 760,904, Sept. 19, 1968, Pat. No. 3,523,588. This application Jan. 8, 1970, Ser. No. 7,318

Int. Cl. G05g 5/08

U.S. Cl. 74—491 **4 Claims**

Safety lever for the power-shift transmission of a tractor, in which the safety lever can be moved to a transmission-unlocking position wherein the safety lever intervenes adjacent the tractor operator's seat to block the exit of the operator from the tractor, and in which the safety lever can be moved to a locking position wherein the safety lever no longer intervenes, but at the same time either retains the transmission locked in neutral position or forces the transmission to take a neutralized setting and thereafter causes the transmission to be retained in that setting, for safety of the operator while exiting from the tractor.

3,691,868

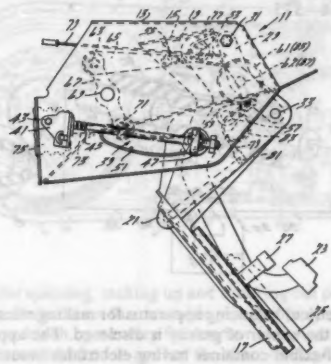
ADJUSTABLE PEDAL

Raymond P. Smith, 30785 Red Maple Lane, Southfield, Mich.

Filed July 6, 1971, Ser. No. 159,865

Int. Cl. G05g 1/14

U.S. Cl. 74—512 **7 Claims**



An adjustable pedal assembly for an automotive vehicle in which the fore and aft positions of the pedals may be varied without affecting the outputs of the individual pedal components. The assembly includes a pedal carrier bracket which is connected by links to a support structure. Each pedal is connected to its controlled device by a flexible tension bearing member. The flexible tension bearing member extends about a guide mounted on one of the links. The guide is located at an intermediate point on the link so that it compensates for the change in position of the pedal without affecting the output of the flexible member.

3,691,869

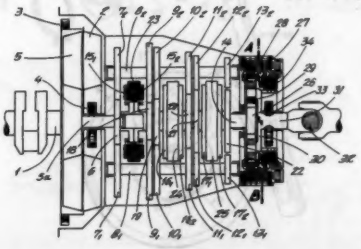
VARIABLE SPEED HYDRAULIC TRANSMISSION

Hermann Klaue, Case Pastale 151, 1820 Montreux, Switzerland

Filed June 25, 1970, Ser. No. 49,626

Int. Cl. F16h 37/00; F16d 25/06

U.S. Cl. 74—740 **9 Claims**



A variable speed transmission connecting an input shaft to an output shaft and including at least one rotating clutch. The clutch is operated by hydraulic pressure fluid delivered to and removed from the outer circumferential periphery of the clutch. Preferably, a plurality of these clutches are arranged on a main shaft of the transmission, and one or more of these clutches may be double clutches, that is, two separate clutches connected to a common coupling member. A secondary shaft

operatively engaged with the input shaft includes gears for operating selected ones of said clutches. A turbine blade may be provided between the input shaft and the clutches and a planetary gear brake may be provided between the clutches and the output shaft.

3,691,870

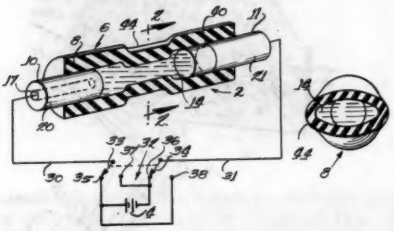
BALANCING DEVICE

Richard Wolf, 15446 Sherman Way, Van Nuys, Calif.

Filed Dec. 1, 1970, Ser. No. 93,998

Int. Cl. F16f *15/22*

U.S. Cl. 74—573 **4 Claims**



An electrical balancing apparatus for making minute adjustments in the center of gravity is disclosed. The apparatus includes a flexible container having electrodes mounted coaxially and connected to a unidirectional current source. The container is filled with an electrolyte so that an applied current causes electrodeposition from one electrode to the other depending on the direction of current flow. The container is constructed of a resilient material in a generally cylindrical shape but including a punched baffle portion adapted to accommodate the expansion and contraction of the electrolyte caused by temperature variations, as well as to prevent the creation of a void in the electrolyte or cracking of the cylinder.

In an alternative embodiment four electrodes are mounted in a generally oval resilient container which is deformable to a spherical configuration to accommodate expansion and contraction of the liquid electrolyte.

3,691,871

ROTARY MOTION TRANSMITTING APPARATUS

Dean E. Gladow, and Donald F. Wilkes, both of Albuquerque, N. Mex., assignors to Rolamite Incorporated, San Francisco, Calif.

Filed June 25, 1970, Ser. No. 49,623

Int. Cl. F16h *13/00*; G01b *3/22*; F16h *25/16*

U.S. Cl. 74—798 **19 Claims**

Apparatus for transmitting rotary motion between two relatively movable members. The apparatus includes an elongated thin flexible element in the form of a band arranged in a pair of adjoining alternate loops with a roller confined within each of the loops. The rollers roll along a circular path as the band progressively passes around the rollers. The rollers and the band are supported on a cylindrical guide surface and the rate of motion of the components of the apparatus relative to each other permits a high degree of amplification or reduction between input and output elements. As an alternative usage, the apparatus readily lends itself to two inputs in a manner equivalent to a geared differential.

3,691,872

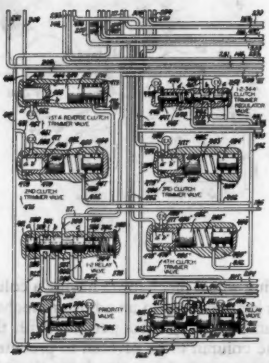
TRANSMISSION AND CONTROLS

Robert H. Schaefer, Westfield, Ind., and Joseph R. Fox, Waukesha, Wis., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 852,760, Aug. 25, 1969, abandoned. This application April 29, 1971, Ser. No. 138,655

Int. Cl. B60k *21/06*; F16h *5/48, 47/08*

U.S. Cl. 74—864 **36 Claims**



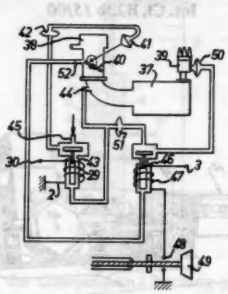
A transmission having a multiratio gear unit providing five forward speeds established by the engagement of a forward drive clutch and one additional individual speed engaging device for each forward speed and a reverse drive by the engagement of the second and fourth forward speed devices for reverse drive. A manual selector valve for selecting and holding in a first speed drive, selecting a range providing speed and torque demand controlled automatic shifting between four speeds, second to fifth and selecting further lower ranges each preventing normal automatic shifting to the highest speed in the next higher range but permitting shifts to all available higher speeds at higher than normal overrun speeds. For each speed an automatic shift valve controls a relay valve. The relay valves are hydraulically sequentially arranged so each lower speed relay valve when upshifted feeds through the downshifted next higher speed relay valve to feed the motor to engage the next speed ratio drive. The relay valves each have low and high inlet, supply and exhaust ports. In the downshift position the low inlet port is connected to the low supply port and the high supply port is connected to the high exhaust. In the upshift position the high inlet port is connected to the high supply port and the low supply port is connected to low exhaust. The second and higher relay valves have a low inlet port having a restrieted feed and a one-way bypass return. Thus each speed drive motor is fed for each speed drive engagement through its restricted feed passage on both up and down shifts and each speed drive motor is exhausted for speed drive disengagement through one restricted exhaust passage on upshifts and another restricted exhaust passage on downshifts to provide individually controlled motor feed and thus engagement rates and individually controlled exhaust rates at one rate during upshift and another rate during downshifts.

3,691,873

FREQUENCY-RESPONSIVE CONTROL DEVICES, NOTABLY FOR REDUCING THE AIR POLLUTION CAUSED BY PETROL ENGINES

Claude Lombard, and Jean-Louis Perrin, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, 07, Billancourt/(Haute de Seine) and Automobiles Peugeot, Paris, France

Filed Sept. 21, 1970, Ser. No. 73,764
Int. Cl. F02s *11/10*; B60k *11/16*
U.S. Cl. 74—866 8 Claims



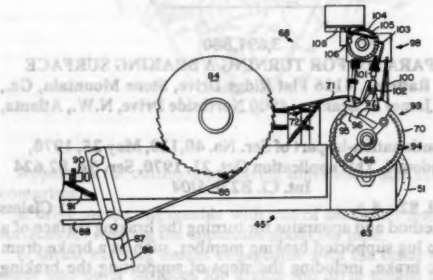
An air pollution reducing electronic frequency responsive control device for controlling the carburetor throttle, the gear changing mechanism, and the ignition vacuum advance of an internal combustion engine of a vehicle. The control device includes a vehicle speed responsive governor which provides an input to an electronic circuit which in turn controls one or a plurality of electromagnetic valves. One electromagnetic valve acts to prevent complete closing of the carburetor throttle when the vehicle is traveling above a predetermined speed, thus preventing an excessively rich fuel mixture if the operator remove his foot from the accelerator pedal.

3,691,874

AUTOMATIC FEED CONTROL FOR SAW GRINDER

Ivan Clay Miller, 1509 Helen Ave., Missoula, Mont.

Filed Jan. 25, 1971, Ser. No. 109,327
Int. Cl. B23d *63/12*
U.S. Cl. 76—41 6 Claims



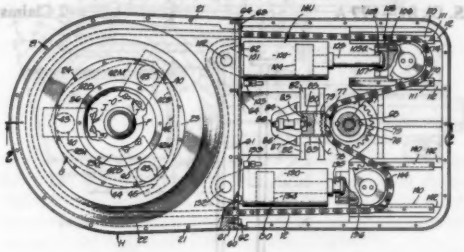
An automatic feed control is described for controlling the operation of a grinding machine having a diamond abrasive wheel for grinding carbide teeth of a circular saw. The automatic feed control automatically advances the diamond wheel after the saw blade has been rotated a selected number of revolutions until the carbide teeth have been ground to a desired depth. The feed is automatically terminated and the operation of the machine continued until the saw blade has rotated a selected number of revolutions to remove any high spots that may remain.

3,691,875

CHAIN DRIVEN SPINNING, MAKE UP AND BREAK OUT TONGS

Bela Geczy, Glendale, and Carl Alfred Wilms, La Habra, both of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed April 16, 1971, Ser. No. 134,554
Int. Cl. B25b *17/00*, *21/00*
U.S. Cl. 81—57.14 20 Claims



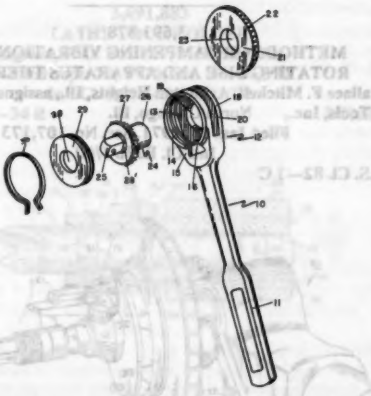
A tong for spinning, making up and breaking out pipe joints, in which a chain drives the rotatable pipe gripping means and the chain is driven by a rotary fluid motor for spinning a pipe, and the motor is locked to anchor the chain during final make up and initial break out of the pipe joint, the chain being actuated by pressure responsive actuator cylinders engaging runs of the chain between the pipe gripping means and the rotary motor to apply high make up and break out torque to the pipe gripping means.

3,691,876

RATCHET SPINNER WRENCH

Leon Cassidy, Jr., R.D. #2, Wykertown Road, Branchville, N.J.

Filed Feb. 8, 1971, Ser. No. 113,415
Int. Cl. B25b *13/00*
U.S. Cl. 81—58.1 2 Claims



An improved spinner for a ratchet wrench wherein the wrench includes an integral drive shaft, ratchet gear and a bearing that is disposed crosswise of the operating end of the handle and retained therein by a cover plate and a retaining snap ring. The operating end of the handle is provided with a lengthwise slit so as to form a yoke in which is disposed a spinner. The bearing portion of the drive mates with and is locked to the spinner as by a press fit or spline whereby when the spinner is rotated by hand the drive will turn as well as the

socket held thereon. Thus the bolt or nut to be threaded can be started by hand operation with a minimum of space being occupied in close working areas.

3,691,877

LONG-HANDLED WRENCH

Joseph Warren Harris, Vernal, Utah, assignor to C. R. Industries, Vernal, Utah

Filed Nov. 16, 1970, Ser. No. 89,757
Int. Cl. B25b *13/00*; B25g *1/00*; B25b *13/10*
U.S. Cl. 81—177 A 2 Claims

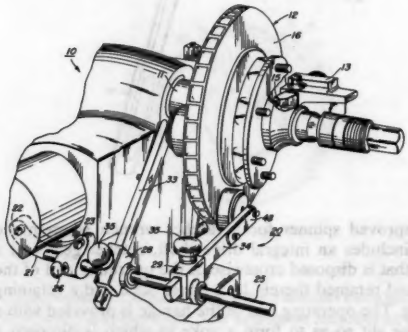
A wrench having long operating handles, so necessary manipulation can be effected in restricted areas by a person unable to enter such areas. Relatively long handles have corresponding ends pivotally attached to opposite ends, respectively, of a rigid wrench structure provided with jaws at one end of an activating arm portion. Thus the wrench may be held in place by one of the handles and operated by the other. The handles may be provided with interlocking means adjacent to their free ends for enabling manipulation thereof with only one hand.

3,691,878

METHOD FOR DAMPENING VIBRATIONS IN A ROTATING DISC AND APPARATUS THEREFOR

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Jan. 18, 1971, Ser. No. 107,173
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C 10 Claims



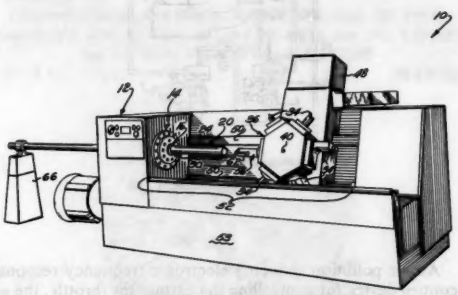
A vibration dampener for inhibiting vibrations in a rotating disc includes a pair of pressure pads adjustably mounted against opposite faces of the disc at different angular positions relative to the location at which a cutting tool engages the disc.

3,691,879

MACHINE TOOL

Charles T. Blake, Shaker Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed June 11, 1970, Ser. No. 45,478
Int. Cl. B23b *15/00*
U.S. Cl. 82—2.5 12 Claims



An improved machine tool for operating on bar stock includes a gripper which is moved away from a chuck to pull bar stock to a work station. When the gripper has been moved through a distance sufficient to pull a desired length of bar stock to the work station, a numerical control system is effective to interrupt movement of the gripper and bar stock. The numerical control system enables different lengths of bar stock to be fed to the work station on successive cycles of operation of the machine tool in response to stored numerical control data. In one embodiment of the machine tool, the gripper is advantageously mounted on a turret which supports tools and is operated by the numerical control system in accordance with a predetermined program to machine the length of bar stock fed to the work station.

3,691,880

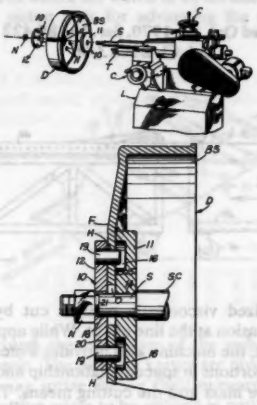
APPARATUS FOR TURNING A BRAKING SURFACE

James Ratteree, 4126 Flat Ridge Drive, Stone Mountain, Ga., and James A. Seaman, 4900 Northside Drive, N.W., Atlanta, Ga.

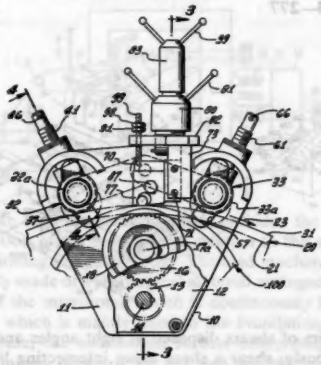
Continuation-in-part of Ser. No. 40,120, May 25, 1970, abandoned. This application Oct. 21, 1970, Ser. No. 82,624
Int. Cl. B23b *5/04*
U.S. Cl. 82—4 A 11 Claims

A method and apparatus for turning the braking surface of a vehicle lug supported braking member, such as a brake drum or disc brake, including the steps of supporting the braking member on a refinishing lathe so that its lug holes are concentric with respect to the rotational axis of the lathe, rotating the braking member, and engaging the braking surface of the member with the lathe cutting tool maintained at selected distances from the axis of rotation to redefine the braking surface concentric with respect to the circle defined by the lug holes in the braking member. The apparatus includes a backing plate adapted to be carried by a turning lathe and defining an annular groove in the working face thereof adapted to lie behind the lug holes of a braking member when placed thereon and a clamping plate also adapted to be carried by the lathe in juxtaposition with the backing plate, the

clamping plate including a plurality of support pins arranged to project through the lug holes of the braking member positioned between the clamping and backing plates to position the lug holes through the member concentrically about the rotational axis of the lathe.



3,691,881
PIPE CUTTING APPARATUS
George Bachmann, 945 Metro Drive, Monterey Park, Calif.
Filed March 29, 1971, Ser. No. 128,953
Int. Cl. B23b 3/22, 5/04, 3/04
U.S. Cl. 82—4 C 13 Claims



Apparatus for cutting pipe having inner and outer surfaces, comprises:

a. drive means engageable with one of said inner and outer surfaces for rotating the apparatus about the pipe,

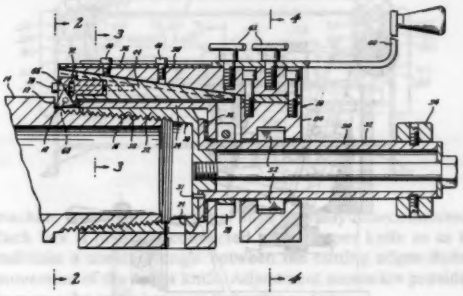
b. thrust exerting means engageable with the other of said inner and outer surfaces for urging the drive means toward said pipe, said thrust exerting means including individually adjustable rollers engageable with said other surface,

c. support structure for said drive means and thrust exerting means,

d. a first cutting tool and a head therefor carried by said support structure for movement toward and away from said other surface of the pipe, and

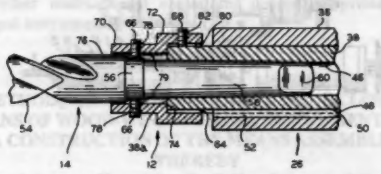
e. other means including a spring to yieldably urge the head toward said other surface of the pipe so that the cutting tool may have yieldable cutting engagement with the pipe as the apparatus rotates about the pipe.

3,691,882
THREADED PIPE JOINT FACING TOOL
Dulas L. Massey, 1914 Ballantine, Houston, Tex.
Filed March 18, 1971, Ser. No. 125,779
Int. Cl. B23b 3/22, 5/04
U.S. Cl. 82—4 C 10 Claims



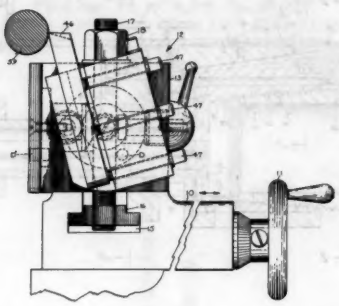
A threaded pipe joint facing tool for refacing the shoulders of threaded pipe joints by providing a tool that moves a cutting tool radially around the tool joint axis and perpendicular to the tool joint axis at the same time for refacing a tool joint perpendicular to the joint axis. A support having internal threads for aligning the facing tool with the axis of a threaded tool joint and with a first tapered slide which when rotated about a lead screw mandrel moves longitudinally to move a second coacting tapered slide transversely to the tool joint axis carrying a cutting tool which moves radially around and perpendicular to the tool joint axis to reface the tool joint shoulder. The cutting means being adjustably supported from the second slide for longitudinal movement for selecting the amount of cut to be made. The cutting tool including a cutting edge for cutting a groove for use as an O ring groove and/or stress relief groove adjacent the tool joint shoulder. An adapter having threads on each end for supporting the facing tool for refacing the shoulders of the box end of the tool joint.

3,691,883
LATHE TOOL HOLDER
Maurice S. Ingram, P. O. Box 169, McHenry, Ill.
Filed Sept. 22, 1970, Ser. No. 74,370
Int. Cl. B23b 43/02, 31/04
U.S. Cl. 82—34 R 2 Claims



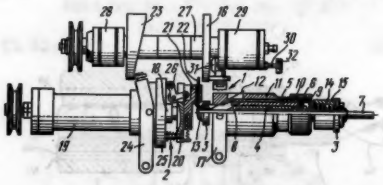
A tool holder for a lathe having a spindle provided with a tool shank-receiving tapered bore at one end and an external keyway extending longitudinally from such end comprises tool support means adapted for securing a tool against rotation relative thereto, key means projecting from the support means and adapted to be received in the keyway for securing the support means against rotation relative to the spindle, and means on the support means cooperative with the key means for mounting the support means on the spindle end to support a tool coaxially with the spindle.

3,691,884
TOOL POST
George V. Lindgren, 139 Highland St., Townsend, Mass.
Continuation-in-part of Ser. No. 576,325, Aug. 31, 1966, abandoned. This application Jan. 28, 1971, Ser. No. 110,660
Int. Cl. B23b 29/10
U.S. Cl. 82—36 R 5 Claims



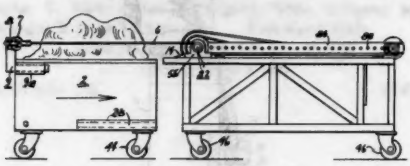
This invention has to do with a tool post and, more particularly, a tool and support combination to be used on a lathe or the like, which is so arranged that the line of force caused by the operation of the tool is nearly linear through the device and the force is thereafter directed to the unyielding base of the machine. The invention further provides means for adjusting the presentation of the tool to the workpiece while still allowing the device to be returned to its rigid state.

3,691,885
DEVICE FOR CUTTING ELASTIC BAR STOCK INTO SPECIFIED LENGTHS
Uriel Grigorievich Fridman; Gera Sergeevna Mor; Rolands Bernkhardovich Skadynsh, and Ivan Emelyanovich Kuzmenko, all of, Riga, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe bjuro Khimizalsui, narodnogo khozaistva Latruskoi SSR USSR
Filed Jan. 19, 1971, Ser. No. 107,710
Int. Cl. B23b 3/04, 5/14
U.S. Cl. 82—75 3 Claims



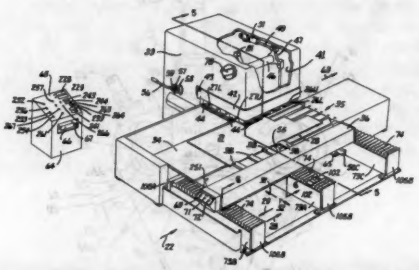
A device for cutting elastic bar stock into specified lengths comprising a cutting mechanism whose cutting moves around the bar stock to be cut and reciprocates towards its center, and a feed mechanism. The feed mechanism comprises a guide mandrel with a hole for the bar stock and two grips for said stock, one of the grips being installed immovably relative to said guide mandrel while the other grip can move in the direction of feed. The grips are formed by cantilever-mounted spring plates whose free ends clamp the bar stock, said plates being directed at an acute angle to the bar stock which ensures self-locking of the stock in the direction opposite to its feed.

3,691,886
APPARATUS FOR CUTTING AN UNVULCANIZED VISCOELASTIC MASS
Robert M. Elsworth, 330 Albany-Shaker Road, Loudonville, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,422
Int. Cl. B26d 3/00
U.S. Cl. 83—1 8 Claims



An unvulcanized viscoelastic mass is cut by a machine which applies tension at the line of cut. While applying tension at the line of cut, the machine also provides a means for maintaining the cut portions in spaced relationship and for continuously moving the mass into the cutting means. The apparatus is especially suitable for cutting silicone gum containing fillers, extenders, process aids and vulcanizing agents. The compounded gum is shipped to the ultimate consumer who vulcanizes the compounded gum to form silicone rubber. The rubber is used in high temperature automotive transmission gaskets, radiator hose, and fan belts.

3,691,887
AUTOMATIC SHEARING METHOD AND APPARATUS
Gerald V. Roch, New Augusta, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.
Filed June 1, 1970, Ser. No. 42,047
Int. Cl. B26d 5/12, 5/30
U.S. Cl. 83—277 38 Claims

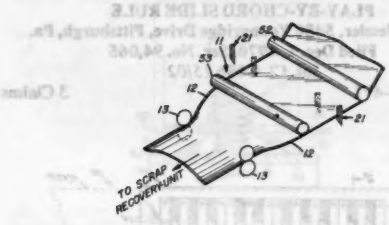


Two pairs of shears disposed at right angles and operable simultaneously, shear a sheet along intersecting lines simultaneously, the sheet being held and located by a power-driven positioning carriage. Each blank is cut to finished size, and various operational modes are available.

3,691,888
APPARATUS FOR SETTING UP A RAPIDLY MOVING WEB FOR REMOVAL OF A SIDE PORTION THEREFROM
Kenneth F. Brandon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 3, 1970, Ser. No. 69,202
Int. Cl. B23d 25/02; B26d 5/20
U.S. Cl. 83—302 11 Claims

In an apparatus for removing the side portions from a rapidly moving web such as by threading the web through a pair of rotary slitting knives that have their cutting edges spaced apart a distance corresponding to the width of the desired web, there is provided a pair of piercing knives located upstream of the slitting knives for setting-up the rapidly mov-

ing web for initial entry into the slitting knives. The piercing-knives are supported on vertically reciprocable piston rods for plunging the piercing knives into the rapidly moving web at points inward of where the web is to be slit and on horizontally reciprocable piston rods for advancing the piercing knives



outwardly through the side edges of the web to form transverse cuts therein. The piercing knives are pivotably mounted so that they may rotate during their outward movement to enable their cutting edges to be utilized in cutting through the side edges.

3,691,889

MICROTOME FEED MECHANISM

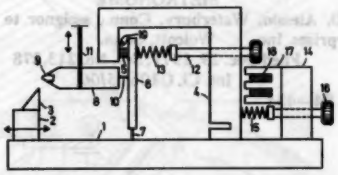
Bo Gosta Forsstrom, Skalby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed April 26, 1971, Ser. No. 137,196

Claims priority, application Sweden, May 8, 1970, 6344/70

Int. Cl. G01n *1/06*

U.S. Cl. 83—401 **6 Claims**



Microtome feed mechanism which provides the requisite relative motion of the specimen in relation to the sectioning tool at sectioning in a microtome. The feed mechanism comprises a body made of a rheological material arranged between that part of the microtome which is continuously fed and a component which is mainly fixed to the foundation block of the microtome, the mechanism further comprising a force generating means between the fed part and the component fixed to the foundation, from which force generating means the fed part is influenced by a substantially constant force in the feeding direction. Hence a substantially constant feeding rate is obtained due to the deformation of the body made of a rheological material. The mechanism can be arranged in such a way that the body is being compressed, extended, or sheared.

3,691,890

SHEARING MACHINE

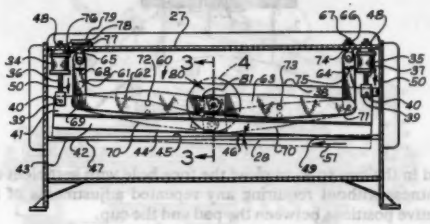
Charles Kuchyt, Carmel, Ind., assignor to Hercules Manufacturing Company, Inc., Shelbyville, Ind.

Filed April 30, 1971, Ser. No. 138,911

Int. Cl. B26d *5/12*

U.S. Cl. 83—624 **8 Claims**

A machine for shearing sheets of metal. The machine has an upper knife movable toward a fixed lower knife with the cutting edge of the upper knife being positioned at an angle with respect to the cutting edge of the lower knife. A pair of hydraulic cylinder motors force the upper knife toward the lower knife with the point of intersection of the cutting edges being moved progressively along the length of the knives. A pair of links have proximal ends pivotally connected to the



machine frame and have distal ends pivotally interconnected. Each link is pivotally connected to the upper knife so as to maintain a constant angle between the cutting edges during movement of the upper knife. Adjustment means are provided to preset the angle between the cutting edges.

3,691,891

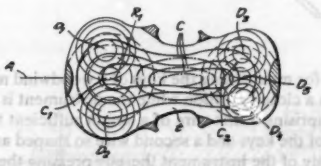
MUSICAL INSTRUMENT WITH CORDS AND BOW

Ion Delu, Chitila Padure near 14, Romania, assignor to Complexual Pentru Prelucrarea Lemnuli Reghin Romania, Bucuresti, Romania

Filed Sept. 8, 1970, Ser. No. 70,130

Int. Cl. G10d *1/02, 3/02*

U.S. Cl. 84—275 **3 Claims**



A stringed instrument having the general configuration of a violin in which the front and rear resonance plates are formed along their interior with recesses of generally elliptical configuration centered on the longitudinal axis of the instrument while additional recesses are formed at vibration centers at quadrants of the body to permit the instrument to complement the usual violin and replace the viola or violincello in quartets and other instrumental ensembles consisting primarily of stringed instruments.

3,691,892

METHOD FOR ASSEMBLING TONE HOLE CLOSING MEANS OF WOOD-WIND MUSICAL INSTRUMENTS AND A CONSTRUCTION OF THE MEANS ASSEMBLED THEREBY

Hideo Matsuura, Hamakita; Ikuji Kurokawa, and Yoshihiko Murase, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 27, 1970, Ser. No. 67,485

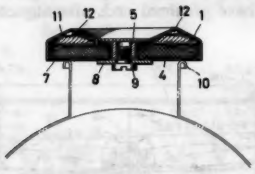
Claims priority, application Japan, Sept. 1, 1969, 44/69215

Int. Cl. G10d *7/00*

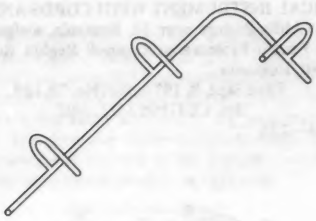
U.S. Cl. 84—380 **3 Claims**

An air-tight sealing of a pad closing a tone hole of a wind instrument is much facilitated by interposing a foamable thermosetting plastic resin preimpregnated sheet between the bottom wall of a cup and the pad, and heating the preimpregnated sheet thus interposed, so that the sheet is foamed and cured

while the pad is maintained in a closed condition over the tone hole of the wind instrument, whereby the pad can be assembled in the cup so as to close the tone hole with sufficient airtightness without requiring any repeated adjustments of the relative positions between the pad and the cup.

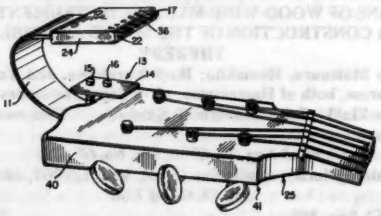


3,691,893
CLAMPS FOR WOODWIND MUSICAL INSTRUMENTS
Lester C. Dickson, Jr., P.O. Box 774, Jonesboro, Ga.
Filed Nov. 23, 1970, Ser. No. 91,982
Int. Cl. G10g *7/00*
U.S. Cl. 84—453 **3 Claims**



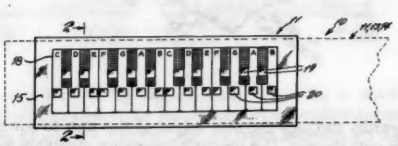
A clamp for maintaining the keys of a woodwind musical instrument in a closed position while the instrument is not being played comprising a first wire of a length sufficient to contact a plurality of the keys and a second wire so shaped as to firmly grip the body of the instrument thereby pressing the first wire against the keys and holding them in a closed position. The wires may be made of spring steel and covered with a plastic coating.

3,691,894
TUNING DEVICE
Joseph R. Schneider, and Bruce A. Schneider, both of Larchmont, N.Y., assignors to Laser Products & Development Corporation, Inc., Bronx, N.Y.
Filed Oct. 14, 1970, Ser. No. 80,737
Int. Cl. G10g *7/02*
U.S. Cl. 84—454 **3 Claims**



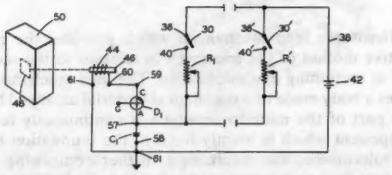
Tuning device for tuning a resonating instrument having operating elements which are capable of being tuned. The device comprises a support arm and a series of reeds connected to one end of the arm. A reed cover surrounds the reeds and a clamping device is connected to the other end of the support arm enabling the device to be attached to the instrument.

3,691,895
PLAY-BY-CHORD SLIDE RULE
Charles A. Nessler, 5480 Youngridge Drive, Pittsburgh, Pa.
Filed Dec. 1, 1970, Ser. No. 94,065
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **3 Claims**



A chord slide rule for learning musical chords and how they relate to the scale, the device comprising at least one insert which is fitted into a slide having a keyboard imprinted thereon for alignment with triad chord indicia imprinted on the underlying inserts to show the different triad chords for each selected keynote. When more than one type of triad chord indicia is placed upon the same insert face, they are distinguished by color coding.

3,691,896
METRONOME
Ralph D. Alessio, Waterbury, Conn., assignor to Tele-Conn Enterprises, Inc., Wolcott, Conn.
Filed Dec. 29, 1971, Ser. No. 213,278
Int. Cl. G10b *15/00*
U.S. Cl. 84—484 **19 Claims**

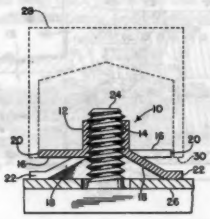


A metronome is disclosed which employs a plurality of potentiometers equal in number to the desired output frequencies. The potentiometers are individually adjusted and individually connected into a timing circuit through the action of a switch which operates in detent fashion.

3,691,897
TORQUE LIMITING NUT
Jerry Allen Mullaney, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed March 31, 1971, Ser. No. 129,733
Int. Cl. F16b *31/02, 39/26*
U.S. Cl. 85—62 **10 Claims**

A rotary nut member including an aperture with internal threads and external wrenching surfaces adapted to accept

torque from an axially positioned driver. Spring legs extend from the body portion of the nut to engage the driver and force it upwardly out of contact with the wrenching surfaces when the nut reaches a predetermined tension.



3,691,898

EDGE BURR REMOVAL APPARATUS

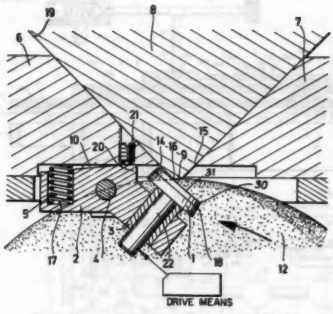
Kurt Held, 7201 Schura Uber, Tuttlingen, Germany

Filed April 2, 1970, Ser. No. 29,345

Claims priority, application Germany, April 3, 1969, P 19 17 212.4

Int. Cl. B23c *3/12*

U.S. Cl. 90—11 R **13 Claims**



During grinding of a chamfer on a continuously transported workpiece, an edge with a burr is formed. The burr moves with the workpiece into eccentric engagement with a cutter which is rotated and continuously severs the burr from the edge.

3,691,899

TOOL CHANGE DEVICE FOR A MACHINE TOOL

Bruno Antonietto, Pavone, and Elio Pagella, Ivrea, both of Italy, assignors to Inc. C. Olivetti & C. S.p.A., Ivrea (Turin), Italy

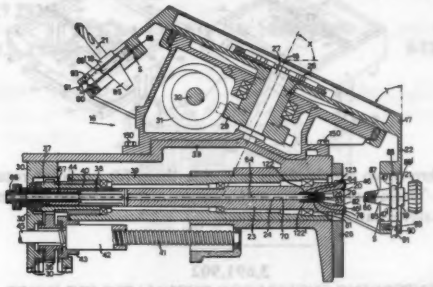
Division of Ser. No. 748,534, July 29, 1968, Pat. No. 3,604,083. This application May 3, 1971, Ser. No. 139,793

Claims priority, application Italy, July 29, 1967, 52600 A/67

Int. Cl. B23c *5/26*; B23b *39/20*

U.S. Cl. 90—11 A **8 Claims**

A machine tool with a device for effecting rapid tool changes comprising a frame carrying a rotatable spindle capable of being coupled to a tool through the intermediary of a tool holder to which the tool is secured. A mechanism for lining up the spindle, from whatever position it is in, to a predetermined angular setting in order to allow engagement of the tool holder with the spindle, and translational locking devices inside the spindle operative to provide a coupling to the tool holder to operate the spindle after the tool has been connected thereto are provided.



3,691,900

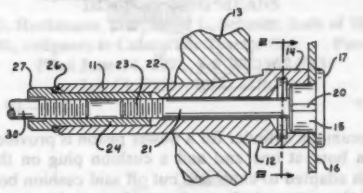
CUTTER ARBOR

Ronald D. Novak, 1900 Traymore Road, and Paul S. Petersen, 2200 Windsor Lake Drive, both of Minnetonka, Minn., assignor to Toolmark Co., Minneapolis, Minn.

Filed April 1, 1971, Ser. No. 130,319

Int. Cl. B23c *9/00*; B23q *3/14*

U.S. Cl. 90—11 A **8 Claims**



A cutter arbor assembly for mounting milling cutters in an arbor holder coupled to the machine drawbar to securely clamp the cutter without having substantial obstructions extending outwardly from the outer cutter face. The arbor assembly permits clamping cutters of different thicknesses and has means to insure that the machine drawbar will always release from the arbor holder before the cutter is loosened.

3,691,901

TABLE MECHANISM FOR USE IN TRANSFERRING DIMENSIONAL AND SHAPE INFORMATION BETWEEN TWO AND THREE DIMENSIONAL OBJECTS

James D. Shelton, Bothell, Wash., assignor to Ralph W. Krustsinger, Jr., 14, Lynnewood, Wash., a part interest

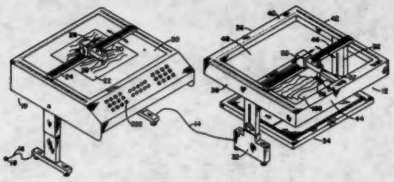
Division of Ser. No. 875,706, Nov. 12, 1969, Pat. No. 3,593,615. This application Feb. 23, 1971, Ser. No. 117,964

Int. Cl. B23c *1/16*

U.S. Cl. 90—13.1 **7 Claims**

A system of master-slave synchro-servo mechanism interconnects, for conjoint movement, a first stylus mounted for two dimensional movement across a paper or other flat surface, and a second stylus mounted for a corresponding two dimensional movement over a three dimensional object. The

second stylus is adjustable in the third dimension, and both styluses may be rotatable and interconnected by master-slave



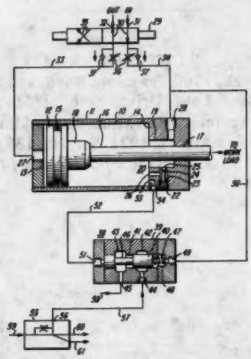
synchro-servo mechanisms adapting them for conjoint rotation. The synchro-servo mechanisms are reversible so that each stylus can control the other.

3,691,902

MONITORING SYSTEM FOR PNEUMATIC CYLINDER

Joseph Lebzelter, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 13, 1971, Ser. No. 162,069
Int. Cl. F01b *25/26*; F15b *15/22*
U.S. Cl. 91—1 11 Claims



A pneumatic cylinder for a power piston is provided with a cushion bore at one end and a cushion plug on the piston which is adapted to enter and cut off said cushion bore at the end of the piston stroke and provide a cushioning pressure area between the piston and said end of the cylinder. A pressure leakage path with a cushion adjusting screw therefor is provided between the cushioning area of the cylinder and the cushion bore. A spring-biased plunger-type control valve is connected at one end with the cushioning area of the cylinder and at the other end with the cushion bore, and responds to a pressure differential therebetween at the end of the piston stroke to provide a pulse output through the valve as a monitoring signal for the cylinder operation.

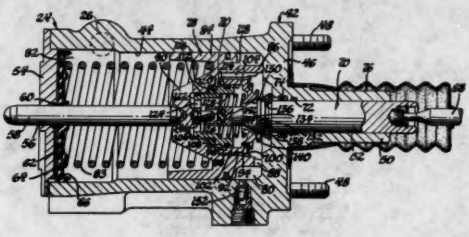
3,691,903

HYDRAULIC POWER BRAKE BOOSTER

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 76,473, Sept. 29, 1970. This application Sept. 13, 1971, Ser. No. 179,684
Int. Cl. F15b *13/16*, *13/04*
U.S. Cl. 91—49 1 Claim

A hydraulic power brake booster powered by power steering gear pump pressure and utilizing an open-center valve so that fluid flows through the booster without pressure reduction when the booster is not activated. The valve assembly includes a radially floating valve seat which provides for self-centering, permits a valve separation operation to pass viscous cold hydraulic fluid or any elements which may tend to overly restrict the valve. It also includes a valve face design providing entrance and exit angles defining a venturi-type passage con-



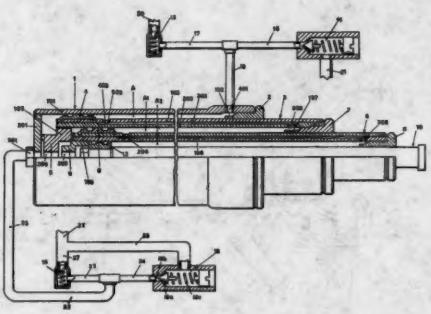
ductive to laminar flow with consequent reduction in valve noise, and has a hydraulic reaction mechanism which includes an arrangement for supported line pressure.

3,691,904

METHOD AND APPARATUS FOR CONTROLLING THE EXPANSION AND RETRACTION OF A TELESCOPIC CYLINDER ASSEMBLY

Arturo Pesci, 37, Via IV Novembre, Cento, Ferrara, Italy

Filed Dec. 17, 1969, Ser. No. 885,680
Claims priority, application Italy, Dec. 28, 1968, 7558 A/68
Int. Cl. F01b *7/00*; F15b *13/042*
U.S. Cl. 91—169 6 Claims



In a double-acting telescopic hydraulic cylinder assembly, a counter-pressure in the discharge chambers is provided, opposing those into which fluid under pressure is supplied. Said counter-pressure is obtained by providing discharge valves which are gauged so as to permit discharge of the fluid to be expelled only when a predetermined pressure value of the fluid in the said discharge chambers is attained.

3,691,905

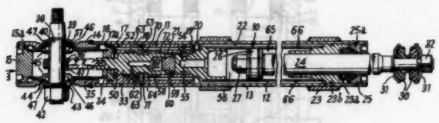
FLUID MOTORS

Michael David Baxter, Rochester, England, assignor to Hobaurn-Eaton Manufacturing Company Limited, Kent, England

Filed July 24, 1970, Ser. No. 58,130
Int. Cl. F01b *15/00*; F15b *9/10*
U.S. Cl. 91—216 A 6 Claims

A fluid motor arrangement comprises a double-acting piston element which is slidably mounted in a cylinder element and the two axial sides of which have unequal effective areas, and a valve for controlling the admission of pressure fluid to the cylinder at opposite sides of the piston. The valve comprises a valve body member in which a spool valve member is slidably mounted. The valve body provides therein two chambers the pressures in which respectively act upon ax-

ially oppositely facing surfaces of the spool valve member, the ratio of the effective areas of said surfaces to each other being the same as that of the effective areas of the two sides of the piston. The (first) chamber having the larger of the two effective areas of the spool valve member is in permanently open communication with the cylinder at that side of the piston having the larger effective area, and the (second) chamber having



the smaller of the two effective areas of the spool valve member is in permanently open communication with the cylinder at that side of the piston having the smaller effective area. The construction and arrangement is such that when the valve is operated in either sense from an initial position to actuate a movement of the fluid motor, the resulting variation in the pressures applied in said first and second chambers of the valve tends to return the valve to its initial position.

3,691,906

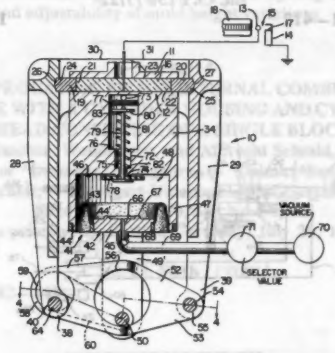
PNEUMATICALLY OPERATED ACTUATOR

Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 749,745, Aug. 2, 1968, Pat. No. 3,634,706. This application May 4, 1970, Ser. No. 46,581

Int. Cl. F01l 21/04; F15b 13/042

U.S. Cl. 91—222 **2 Claims**



A pneumatically actuated operator for altering the stresses in a piezoelectric crystal means for spark igniting purposes and the like, the actuator having a movable wall that cooperates with a housing to define a chamber therebetween. The actuator has a first passage provided with a valve seat leading to the chamber and is adapted to be interconnected to a pneumatic source. The actuator has a second passage provided with a valve seat leading to the chamber and is adapted to be interconnected to the atmosphere. A single valve member is movably carried by the housing for opening the valve seat of the first passage and closing the valve seat of the second passage when the movable wall is in a predetermined deactuated stroke position thereof. The single valve member is adapted to close the valve seat of the first passage and open the valve seat of the second passage when the movable wall is in a predetermined actuated stroke position thereof whereby the movable wall is cycled between the predetermined positions thereof as long as the pneumatic source is interconnected to a chamber.

3,691,907

RECIPROCATING FLUID OPERATED ACTUATOR

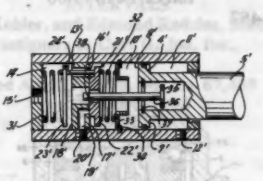
Hanns-Dieter Paschke, Olgaweg 6, Neckarsulm, Germany

Filed April 6, 1970, Ser. No. 25,842

Claims priority, application Germany, April 8, 1969, P 19 17 792.5

Int. Cl. F01b 7/18 ; F01l 23/00

U.S. Cl. 91—321 **6 Claims**



A reciprocating fluid operated actuator comprising a cylinder containing a differential piston and means for admitting fluid under pressure to the opposite ends of the cylinder and a reversing valve in the closed end wall of the cylinder for selectively opening and closing an inlet and outlet port at that end. The reversing valve is arranged to be actuated automatically by the piston through a spring and a lost motion mechanism at the opposite ends of the piston stroke. On the remote side of this end wall is a further pressure chamber, to which pressure fluid is admitted, and the reversing valve includes a valve element in this chamber controlling the flow through an inlet passage from the chamber into the adjacent end of the main cylinder, and a second valve element within the main cylinder controlling the outlet. The pressure inlets and outlets are all connected to the main cylinder.

3,691,908

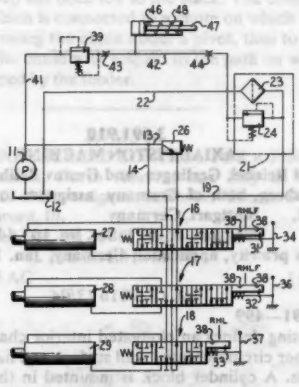
COMBINED HYDRAULIC AND MECHANICAL DETENT DISENGAGING MEANS

Larry G. Hackmann, and James L. Schmitt, both of Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,713

Int. Cl. F15b 11/16, 13/01

U.S. Cl. 91—412 **9 Claims**



Hydraulic kick-out circuitry and mechanism for automatically releasing work implement control valves from detented positions to neutral positions when the work implement actuating hydraulic cylinders controlled by the valves reach the ends of their strokes. The arrangement is such that in a multiple control valve system the valves are released in a sequential order with a low kick-out force which can be overriden by the operator when necessary.

3,691,909

AXIALLY BALANCED ROTARY PISTON MACHINE

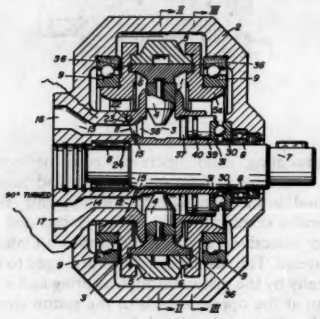
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Division of Ser. No. 749,028, July 31, 1968. This application Jan. 13, 1970, Ser. No. 2,620

Claims priority, application Switzerland, July 10, 1964, 9137/64

Int. Cl. F01b *13/06*

U.S. Cl. 91—487 **5 Claims**



Axially movable balancing pistons are provided in axial cylinders of the rotor of a radial piston machine, pressing against the inner ring of a ball bearing whose outer ring is fixed to the housing so that the rotor, the balancing pistons, and the inner ring rotate together. The axial cylinders are the end portions of axial balancing passages extending between the ends of the rotor, and having on the end remote from the balancing pistons, ports on a rotary control face of the rotor cooperating with the inlet and outlet ports on a stationary control face of the housing. The pressure of the balancing pistons is transmitted by the ball bearing, or other thrust bearing, to the housing so that the rotor is axially displaced toward the stationary control face, and the rotary control face is pressed with the desired force against the stationary control face.

3,691,910

AXIAL PISTON MACHINE

Eckehard Reichel, Gerlingen, and Gustav Zellbeck, Esslingen-Hegensberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

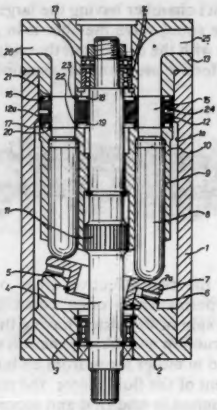
Filed Jan. 4, 1971, Ser. No. 103,444

Claims priority, application Germany, Jan. 10, 1970, P 70 00 688.1

Int. Cl. F01b *13/04*

U.S. Cl. 91—499 **10 Claims**

A housing defines an elongated interior chamber bounded by an inner circumferential wall surface and having a longitudinal axis. A cylinder block is mounted in the chamber for rotation and has two axial ends and a plurality of open-ended passages paralleling the axis. A tilt plate is arranged in the chamber adjacent one end of the block and has a surface inclined to the axis and facing this one end, with a plurality of pistons being respectively reciprocably received in the passages and each having a free end-portion which bears upon the inclined surface of the tilt plate to slide thereon during rotation of the cylinder block. A stationary valve plate is mounted in the chamber and slide in contact with the outer end of the block and has a circumferential edge face facing the inner wall surface and a plurality of apertures adapted for registry with the bores of the cylinder block. At least one circumferential recess provided in the edge face extends inwardly towards but short of the aforementioned apertures.



3,691,911

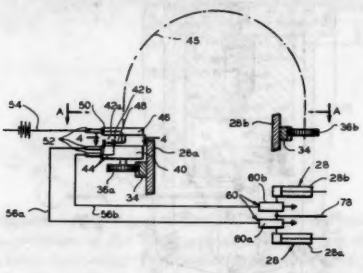
POWER DEVICE WITH SYNCHRONIZATION OF PLURAL ACTUATORS

Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company

Filed June 25, 1970, Ser. No. 49,608

Int. Cl. F15b *11/22*

U.S. Cl. 91—412 **13 Claims**



A power device having a plurality of hydraulic actuators, and means for synchronizing the speed of movement thereof, including a sensing member driven by each actuator, one of the actuators being a master and the others slaves, the sensing members of the slave actuators being interfitted with the sensing member of the master actuator, and upon variation in speed of any of the slave actuators relative to the master actuator, the consequent interengagement of the sensing members controls an electric circuit and increases or decreases flow of fluid to the respective slave actuators according to relative slower or faster movement thereof.

3,691,912

Patent Not Issued For This Number

3,691,913

CLOSURE APPARATUS

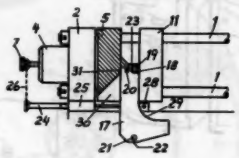
Peter Florjancic, St. Martinstr. 12, 81 Garmisch-Partenkirchen, Germany

Filed June 5, 1970, Ser. No. 43,706

Claims priority, application Austria, June 10, 1969, A 5486/69

Int. Cl. F01b *1/00*

U.S. Cl. 92—76 11 Claims



An apparatus reciprocating a working member for high pressure working at a working region such as the closure of a mold in injection molding devices and the like is described. A working member is mounted for reciprocation along a line of advancement relative to a high force producing source for high pressure working at a working region. A rigid brace is pivotly mounted alongside of the line of advancement for movement between two positions. In a first position of the rigid brace, corresponding to a closure of a mold, the rigid brace couples the force producing source to the working member for high pressure mold closure working with the rigid brace parallel to the line of advancement. In a second position of the rigid brace, corresponding to opening of the mold, the rigid brace is pivoted generally transversely to the line of advancement to enable the working member to be fully retracted. Several embodiments are shown including working member actuated rigid braces for rapid cycling of the apparatus and adjustability of mold height variations.

3,691,914

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE WITH A CYLINDER HOUSING AND CYLINDER HEAD CONSISTING OF A SINGLE BLOCK

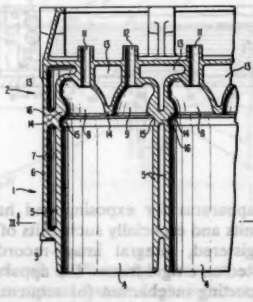
Josef Reisacher, Wendlingen, and Albrecht Schmid, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed July 21, 1970, Ser. No. 56,783

Claims priority, application Germany, July 26, 1969, P 19 38 134.1

Int. Cl. F01b *11/02*

U.S. Cl. 92—169 9 Claims



A reciprocating piston internal combustion engine with a cylinder housing and cylinder head consisting of one block, in which the block extends over all cylinders of a cylinder row and the cylinder housing essentially consists of an inner wall and of an outer wall; the inner wall, together with a cylinder head delimits the cylinder space and the inner and outer walls are connected with each other by a cross wall arranged approximately at the height of the cylinder head bottom and extending over the entire block.

3,691,915

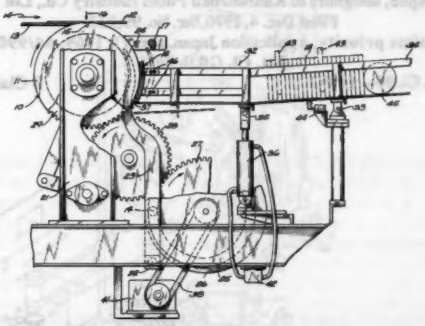
STACKING MACHINE WITH MECHANISM FOR DISPLACING STACKED WORKPIECES AT SPACED INTERVALS

Gene F. Kiela, Kohler, and Edmund Radzins, Sheboygan Falls, both of Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Aug. 27, 1970, Ser. No. 67,488

Int. Cl. B65h *33/00*

U.S. Cl. 93—93 K 10 Claims



The machine feeds workpieces in alignment in a stack. The workpieces typically include a variety of flat, but somewhat thick assembly of multiple layers of sheet material such as folded pads such as diapers, folded table covers, folded bed sheets, etc. For convenience of description these workpieces will be hereinafter denominated as pads. For purposes of marking the boundaries of a predetermined number or group of pads in the stack, the stack is periodically displaced laterally of the path of pads fed to the stack. Accordingly, a pad undergoing feeding to the stack is misaligned with respect to the pads in the group previously fed to the stack. A counter responds to the feeder and actuates the stack displacing mechanism at periodic intervals when the desired number of pads in the group has been fed to the stack. The counter triggers a motor which is connected to a chute on which the pads are stacked to swing the chute about a pivot, thus to periodically displace the chute with respect to the path on which the pads are advanced by the feeder.

3,691,916

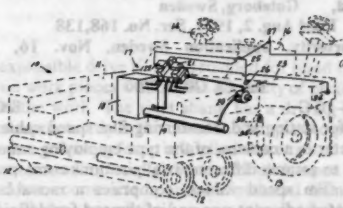
PROPORTIONAL SCREED CONTROL FOR A FINISHER

Earl D. Martenson, North Aurora, and Ray E. Ingham, Wheaton, both of Ill., assignors to Barber-Greene Company, North Aurora, Ill.

Filed Dec. 30, 1970, Ser. No. 102,647

Int. Cl. E01c *19/48*

U.S. Cl. 94—46 AC 11 Claims



A finishing machine, or paver, employs a proportional control system for controlling the disposition of a floating screed

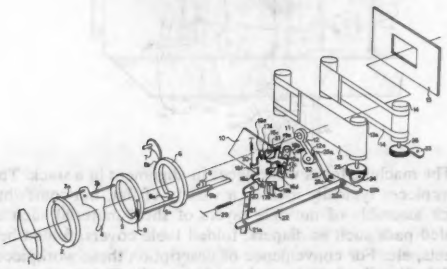
with respect to both grade and slope of the supporting surface. The apparatus for controlling grade includes a device for sensing grade with respect to a reference and an amplifier and switch unit for operating a grade control actuator in response to the sensed changes in grade. The slope control apparatus is generally the same as the grade control apparatus and further includes a variable remote set point unit for establishing a reference indicative of the desired slope.

3,691,917

AUTOMATIC EXPOSURE CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

Yasuo Uchida, and Yoshitaka Kuroyanagi, both of Tokyo, Japan, assignors to Kanishiroku Photo Industry Co., Ltd

Filed Dec. 4, 1970, Ser. No. 95,233
Claims priority, application Japan, Dec. 11, 1969, 44/99028
Int. Cl. G03b 7/08
U.S. Cl. 95—10 PO **9 Claims**



An automatic exposure control system for a single lens reflex camera, in which provision is made such that after the operations of focusing and the like have been carried out with the diaphragm opened at its maximum aperture, the shutter button is depressed so that the diaphragm may be closed to a predetermined aperture stop value simultaneously with the jump up of the reflector mirror and the amount of light passed through the lens may be measured by means of a photo-conductive element located behind the mirror to achieve the time control for the shutter speed.

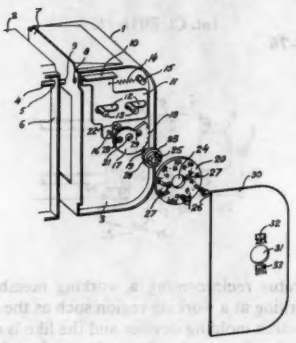
3,691,918

DEVICE IN A PHOTOGRAPHIC CAMERA FOR SETTING THE FILM SPEED VALUE AND TRANSFERRING IT TO THE EXPOSURE METER

Lave Tenne, Norbyvallda, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Aug. 2, 1971, Ser. No. 168,138
Claims priority, application Sweden, Nov. 16, 1970, 15466/70
Int. Cl. G03b 7/00
U.S. Cl. 95—10 C **8 Claims**

A device for setting and transferring film speed value to an exposure meter in a camera, of the type employing a movable rod adapted to assume different axial positions corresponding to different film speed values, comprises a movable stop member located adjacent one end of the rod for defining the axial position of the rod. The position of the stop member is in turn controlled by a rotatable cam curve having a uniform pitch between its lowest and highest points, and a difference in height between said lowest and highest points sufficient to vary the position of the movable stop member through a total distance corresponding to the film speed range of the exposure meter.



3,691,919

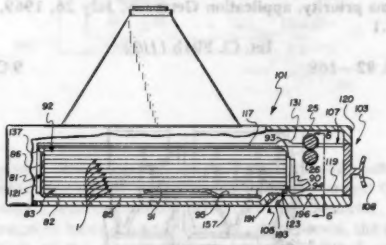
Patent Not Issued For This Number

3,691,920

FILM TRANSPORTING MECHANISM

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,464
Int. Cl. G03b 17/52
U.S. Cl. 95—13 **9 Claims**

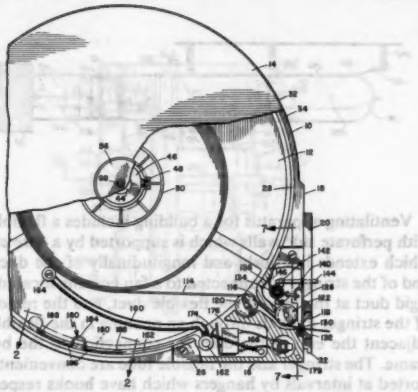


Photographic apparatus for exposing and handling self-processing film units and especially such units of the type including a preregistered, integral image-recording portion strippably supported on a rigid frame. The apparatus includes a slideable transporting mechanism for sequentially moving respective ones of the film units from an exposure position and between a pair of juxtaposed pressure applying members to initiate processing. Thereafter, the image-recording portion is stripped from the frame and the transporting mechanism moves that frame into a waste storage chamber behind the other film units, where it is stored for later disposal.

3,691,921
MICROFILM MAGAZINE

Willard D. Isbell, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed June 11, 1970, Ser. No. 45,304
Int. Cl. G03b 17/26
U.S. Cl. 95—31 12 Claims

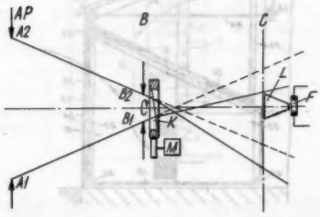


A microfilm magazine having a light tight cover with a single central fastening which has controlled pressure means, the fastening being secured to and stabilizing the film supporting shaft. The film passes through a short minimum contact path and leaves the magazine through an opening fitted with a normally closed light tight door, which opens automatically when the magazine is inserted in a camera. The door and the film footage follower arm are latched clear of the film for loading, the latches being automatically released when the cover is applied. A constant load clutch controls the film reel rotation and the drive means is biased to permit safe assembly into a camera when the drive gears are misaligned.

3,691,922
A METHOD AND APPARATUS OF CONTRAST-DEPENDENT SHARP FOCUSSING

Gottfried Konig, and Peter Schornstadt, both of Dresden, Germany, assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Jan. 4, 1971, Ser. No. 103,671
Int. Cl. G03b 3/00
U.S. Cl. 95—44 R 17 Claims

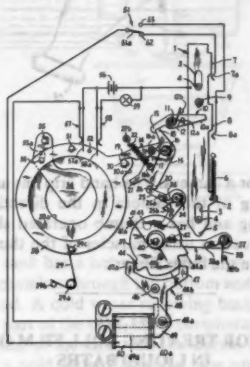


A method of performing contrast dependent sharp focussing of an optical system. Light is direct via an object lens through an image field diaphragm and rotatable optical wedge. A measurement area is defined which is scanned by the optical wedge in combination with a photoelectric receiver behind the measurement area. The photoelectric receiver provides a variable frequency output signal in dependence upon the brightness/darkness distribution within the measurement area, which signal is processed by an electrical circuit to provide a frequency dependent signal which is used to automatically or semi-automatically adjust the position of the object lens to provide sharp focussing.

3,691,923
EXPOSURE TIME CHANGEOVER DEVICE FOR CAMERAS OR SHUTTERS

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Feb. 25, 1969, Ser. No. 802,101
Claims priority, application Japan, Feb. 28, 1968, 43/12427
Int. Cl. G03b 9/60
U.S. Cl. 95—53 EB 6 Claims

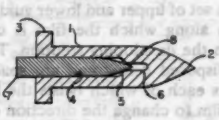


A camera is provided with apparatus including an electric circuit, a battery for supplying electrical energy to the electric circuit, a changeover switch, and shutter operating means for operating the shutter. The shutter operating means is provided with a series of switch contacts electrically connected to the changeover switch and cooperative therewith to select one at least two exposure termination times, one shorter than the other, prior to the initiation of the exposure. The exposure termination time is controlled by an electro-magnetically controlled escapement mechanism.

3,691,924
EXPANSIBLE DRIVE RIVET

William H. Baker, 403 Loudonville Road, Albany, N.Y.

Filed May 18, 1970, Ser. No. 38,371
Int. Cl. F16b 15/04
U.S. Cl. 85—68 9 Claims



An expansible drive rivet is provided for blind riveting of at least two work pieces without the necessity of preforming rivet holes in the work. The rivet shank has a driving head at one end and a pointed tip at the other end adapted to penetrate the work when a driving force is applied thereto, and a blind central bore extending axially therein which is open at the head end and has a constricted portion of reduced diameter near its closed end. An expander pin engages the central bore and expands the shank to form a locking head on the inner side of the work when forced into the constricted portion.

3,691,925

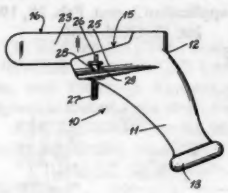
CAMERA HAND GRIP

Jackson J. Shinkle, 1904 No. Geyer Rd., St. Louis, Mo.

Continuation-in-part of Ser. No. 743,826, July 10, 1968, Pat. No. 3,602,123. This application June 15, 1970, Ser. No. 46,276. The portion of the term of this patent subsequent to Aug. 31, 1988, has been disclaimed.

Int. Cl. G03b 17/56

U.S. Cl. 95—86 3 Claims



A hand grip for a camera. The hand grip has an index finger guide for aiming of the camera in the direction the index finger is pointing and has a thumb operated shutter release oriented for actuation using muscles of the thumb that have minimal effect on the index finger.

3,691,926

APPARATUS FOR TREATING ROLL FILM OR THE LIKE IN LIQUID BATHS

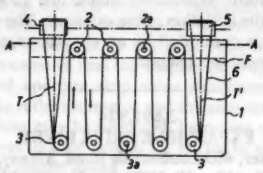
Wolfgang Kwiatkowski, Unterhaching, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 8, 1970, Ser. No. 70,049

Claims priority, application Germany, Sept. 10, 1969, P 19 45 688.9

Int. Cl. G03d 3/12

U.S. Cl. 95—94 R 4 Claims



Developing apparatus for exposed photographic roll film wherein the tank accommodates one or more skeleton frames each supporting a set of upper and lower guide rolls defining a meandering path along which the film is conveyed during transport through the developing solution. The first and last guide rolls are disposed below and are spaced from roller-shaped deflectors each of which twists the film through 90° and causes the film to change the direction of its travel. The deflectors render it possible to convey roll film through successive tanks which are placed side-by-side rather than end-to-end. The skeleton frames in a single tank may be placed side-by-side to define discrete meandering paths which are laterally adjacent to each other or end-to-end to define discrete meandering paths which are disposed end-to-end.

3,691,927

Patent Not Issued For This Number

3,691,928

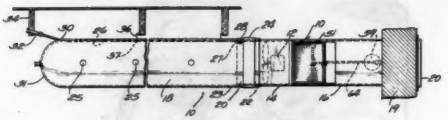
BARN VENTILATOR

Vernon R. Berg, Sr., 1107 W. 8th St., and Vernon R. Berg, Jr., 413 W. Park St., both of Marshfield, Wis.

Filed Jan. 21, 1971, Ser. No. 108,510

Int. Cl. F24f 13/00

U.S. Cl. 98—33 9 Claims



Ventilating apparatus for a building includes a flexible duct with perforate side walls which is supported by a wire stringer which extends interiorly and longitudinally of the duct. One end of the stringer is connected to a fan housing located in the rigid duct at the inlet of the flexible duct, and the remote end of the stringer extends through an opening in the flexible duct adjacent the end of the duct for connection to the building frame. The stringer and the flexible tube are conveniently supported at intervals by hangers which have hooks respectively connected with the building and with the stringer. The rigid portion of the ventilation duct has an end extending through an opening in a building wall to provide an exterior air inlet port. The rigid duct also includes opposed side air entry ports for re-circulating inside air and a damper assembly for selectively closing outside air flow or admitting outside air for mixture with inside air.

3,691,929

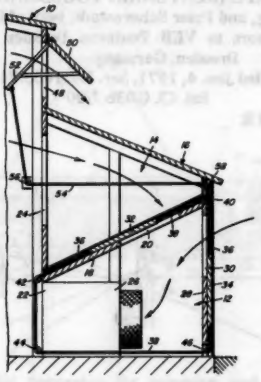
AIR CONTROL SYSTEM

Fred W. Huling, Jr., Ontario, Oreg., assignor to Laminated Wood Products Co., Ontario, Oreg.

Filed March 16, 1971, Ser. No. 124,870

Int. Cl. F24f 13/00

U.S. Cl. 98—33 6 Claims

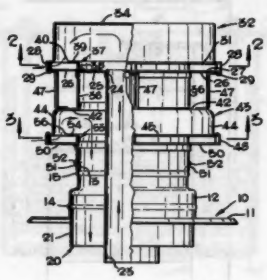


A system of controlling the movement of forced air and the mix of this air through the utilization of synchronized panels which selectively vary the amount of outside air and recirculating air introduce into a mixing chamber for forced discharge into the storage house. An exhaust opening with a controlling panel therefor can be incorporated in the system and synchronized with the intake air closure panel and the circulating air closure panel.

3,691,930
WIND CONTROL FLUE AND AIR INTAKE ASSEMBLY

Gerald W. Steinman, St. Louis, Mo., assignor to Intertherm, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 84,749, Oct. 28, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,415
Int. Cl. F23l *17/04*
U.S. Cl. 98—62 7 Claims

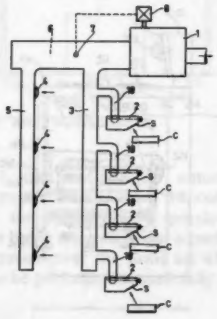


A wind control flue and air intake assembly of the concentric type, particularly useful for gas furnace installations subjected to high winds. Both the air intake and the flue have caps of the same diameter and control flanges spaced inward from the lower edges of the caps. Spacedly beneath each is a horizontal plate, which directs the wind flow horizontally beneath the annular openings so provided.

3,691,931
DEVICE FOR FORCED EVACUATION OF AIR FROM KITCHENS

Sixten Ismael Persson, Stockholm, Sweden, assignor to Luftkonditionering AB, Trosa, Sweden

Filed Jan. 19, 1971, Ser. No. 107,701
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 K 8 Claims

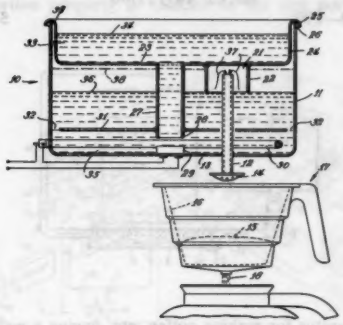


A ventilating system for a building including a suction chamber communicating through ducts with a kitchen and another space, a speed controlled exhaust fan communicating with the suction chamber for evacuating air from the kitchen and the other space, and a damper in the kitchen rotatably disposed in a duct to control the air being evacuated from the kitchen. The ventilating system may be used in a building having a plurality of kitchens and other spaces by utilizing a common duct for the kitchens and a common duct for the other spaces.

3,691,932
APPARATUS FOR SUPPLYING HOT WATER FOR COFFEE BREWING PURPOSES

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed July 6, 1971, Ser. No. 159,819
Int. Cl. A23f *1/08*
U.S. Cl. 99—281 6 Claims

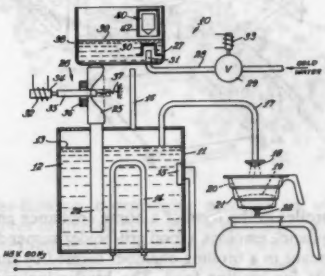


A hot water tank has a hot water discharge pipe extending from a siphon chamber through the bottom and terminating in a discharge head. A cold water receiving basin is telescoped with the upper part of the tank, has a peripheral flange overlying the upper end of the tank, has the siphon chamber on its underside and a cold water discharge pipe opening near the bottom of the tank. A thermostatic control device, located in the path of the cold water from the cold water discharge pipe, controls the energization of an electric heating element located in the lower part of the tank. A metallic baffle overlies the electric heating element to retard the mixing of the incoming cold water with the hot water above the baffle, to act as a safety shield, and to facilitate the transfer of heat to the water in the upper part of the tank.

3,691,933
AUTOMATIC COFFEE BREWER WITH LIQUID LEVEL SENSOR

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed July 6, 1971, Ser. No. 159,767
Int. Cl. A23f *1/08*
U.S. Cl. 99—282 10 Claims

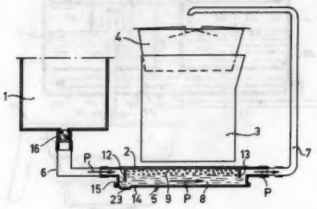


Cold water flows into a basin above a tank of hot water until a predetermined level is reached. A liquid level sensor then shuts off the flow of water into the basin and opens a valve to permit all of the water in the basin to flow into the tank from which the same quantity is siphoned out for brewing coffee.

3,691,934
APPARATUS FOR MAKING COFFEE, TEA AND SIMILAR BEVERAGES

Cornelis Jacob Horn; Mindert Kats, and Sigibertus Marcelinus Catherinus Van Uffelen, all of Europaweg 8, Groningen, Netherlands

Filed March 3, 1971, Ser. No. 120,616
Claims priority, application Netherlands, March 25, 1970, 7004246
Int. Cl. A47j *31/00*
U.S. Cl. 99—290 5 Claims

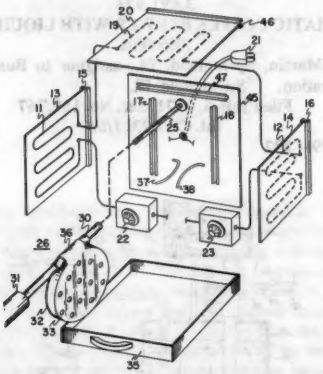


An apparatus for making coffee, etc. having a water container and a collecting vessel which are arranged side by side, and a basket for holding ground coffee and the like which is arranged over the collecting vessel. Water is conveyed to the basket through an outlet pipe connected to the container and through a heated water chamber. The invention provides a steam space in the water chamber with the result that the operation of the apparatus is improved, and the problem of fouling, for example, by scale deposition, is reduced.

3,691,935
BROILER

Frank F. Spetz, 108 Skyline Drive, Jensen Beach, Fla.

Continuation-in-part of Ser. No. 41,227, May 28, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,651
Int. Cl. A47j *27/62*
U.S. Cl. 99—327 13 Claims

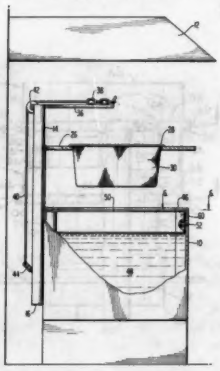


A food broiler in the form of a home appliance and a commercial appliance employs a food gril-holder suspendable on a retaining means in a broiling chamber formed by three cooking elements for broiling food. The broiler includes a food broiling channel or chamber formed by the broiling elements, a food grill-holder and a means for suspending the grill-holder in the broiling chamber. Broiling or cooking is controlled by temperature or time of exposure or both. Switch means is provided for electrically coupling the heating elements selectively for varying the heat intensity in the cooking chamber, as desired.

3,691,936
AUTOMATIC FIRE PROTECTION FOR DEEP FAT FRYER

Carl Chiarelli, 20 Lake End Road, Merrick, N.Y.

Filed June 16, 1971, Ser. No. 153,513
Int. Cl. A62c *35/00*
U.S. Cl. 99—337 10 Claims

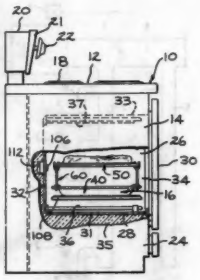


A fire extinguishing means for deep fat frying machines having a vat containing cooking oil which includes an elongated member adapted to be secured to the rear wall of the machine, the elongated member further having associated therewith at one end thereof fusible links which when actuated trigger an arm that lifts the fry basket from the vat and simultaneously with the rise of the fry basket an extinguisher member rises from the liquid to cover the oil.

3,691,937
COMBINED BROILER PAN AND BROIL RACK

Flora L. Meek, and Christian A. Eff, both of Louisville, Ky., assignors to General Electric Company

Filed Feb. 4, 1971, Ser. No. 112,681
Int. Cl. A47j *37/06*
U.S. Cl. 99—340 6 Claims



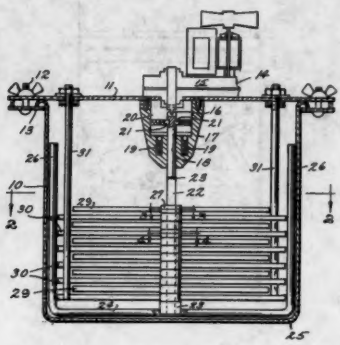
A combined broiler pan and broil rack assembly where the rack is of open wire construction that is supported in an elevated position above the pan so as to space the pan and hence the grease that accumulates therein during the broiling operation far enough away from the source of the radiant energy so as to retard the generation of smoke. A pair of inverted U-shaped stanchions serve as the support means for the rack. Stabilizing means are combined with the stanchions to rigidify the assembly. Preferably the stanchions may alternately serve as the support means of a rotisserie spit in place of the broil rack.

3,691,938

COOKING APPARATUS

James B. Nichols, 45 Roland Park Drive, Huntington, W. Va.

Filed July 1, 1971, Ser. No. 158,780
Int. Cl. A47j 37/06
U.S. Cl. 99—348 4 Claims



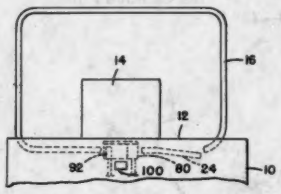
A cooking appliance particularly for preparation of ground meat containing sauces comprises a vessel having a central rotatable shaft carrying a plurality of vertically spaced horizontal bars which rotate with the shaft and between vertically spaced horizontal stationary bars. A U-shaped member attached to the end of the shaft near the bottom of the vessel follows the contour of the vessel and forms a stirring device.

3,691,939

METHOD AND APPARATUS FOR BINDING PACKAGES

George F. Goodley, 703 Summer St., Media, Pa., assignor to TMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 42,932, June 3, 1970, abandoned. This application April 16, 1971, Ser. No. 134,610
Int. Cl. B65b 13/06
U.S. Cl. 100—2 6 Claims



A method of and machine for automatically binding packages involves the formation of a loose loop of binding material at the same time that a previously formed and tightened loop is being secured about a package. This speeds the binding operation over the prior art which required the two operations to be performed sequentially.

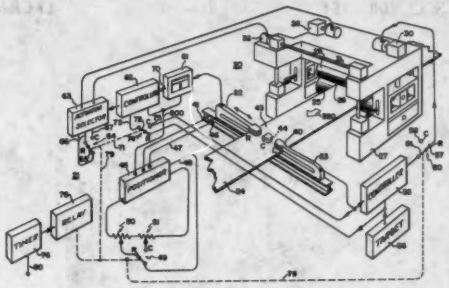
3,691,940

CROSS-AXIS CONTROL FOR THREE OR FOUR ROLL CALENDERS

Willard C. Hays, Columbus, and James D. Smith, Cleveland, both of Ohio, assignors to Industrial Nucleonics Corporation

Continuation of Ser. No. 751,013, May 15, 1968, abandoned, which is a continuation of Ser. No. 362,448, April 24, 1964, abandoned. This application June 29, 1971, Ser. No. 158,098
Int. Cl. B30b 11/22
U.S. Cl. 100—41 44 Claims

Control system for profile adjustment of a property on an elongated sheet material, such as a rubber, during the manufacturing thereof. The system can include two gauges disposed on the output side of the manufacturing apparatus, one gauge being movable between an edge and the center portion of the sheet and the other gauge being at the other sheet edge. The manufacturing apparatus has a first actuator for adjusting the property at one sheet end portion and a second actuator for adjusting the property at the other end portion. The first and second actuators together act to adjust the property across the entire width of the material including a central portion intermediate to the end portions. A third actuator adjusts the central portion property in relation to the end portions. The



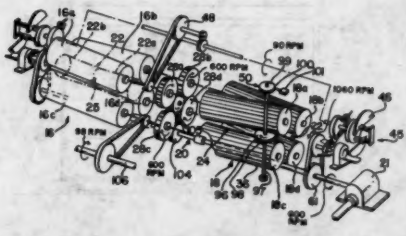
gauges are coupled to a controller that periodically activates the first and second actuators together with the gauges at the end portions and the third actuator separately with the one gauge at the center portion. The first and second actuators are energized, upon actuation, to restore the end portions to their respective target values. The third actuator is energized, upon actuation, by the controller means only when the difference between the central portion property and the property of one of the end portions deviates from a predetermined amount. When there is such a deviation the third actuator initiates an adjustment that returns the central portion to match the edge value.

3,691,941

COMPRESSING APPARATUS

Joseph Molitorisz, Bellevue, Wash., assignor to Rotopak Systems Inc., Seattle, Wash.

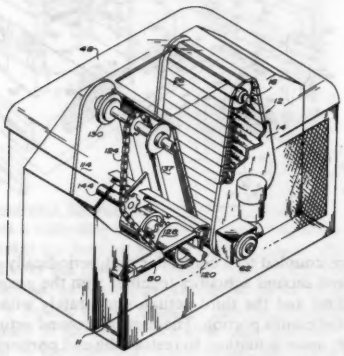
Filed March 8, 1971, Ser. No. 121,700
Int. Cl. B30b 3/04
U.S. Cl. 100—89 20 Claims



A roller-forming compressing machine in which compressed cores of fibrous material are discharged axially in opposite directions from a pair of channels formed by two sets of circumferentially spaced skewed rollers driven from a center transmission. In each set a density controlling valve controls the discharge of the core and provides a torque to supplement the rolling torque. The rollers are provided with circumferentially spaced elongated rigid cleats. Cutting blades are mounted for axial movement with the core and intermittent rotation into the core for slicing it into cylindrical wafers. The wafers are cut to lengths determined by a metering device

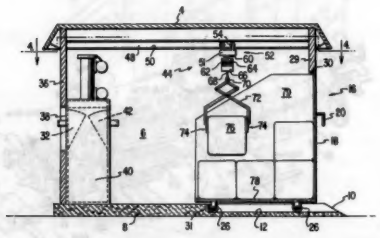
which actuates the cutting blades. Each of the rollers is mounted at one end by a ball type suspension for transferring torque regardless of the skewed or radial position of the roller and two of the rollers in each set provide the feed opening and are spring-mounted at their discharge end to vary the capacity of the feed opening.

3,691,942
CRUSHER
Allen Wagley, 10530 Goodnight Lane, Dallas, Tex.
Filed June 3, 1971, Ser. No. 149,727
Int. Cl. B30b *5/06*
U.S. Cl. 100—151 **17 Claims**



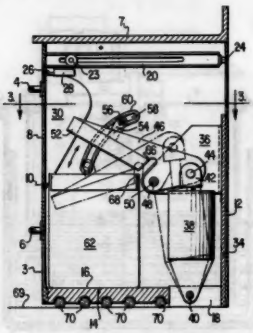
Material, such as cans, is crushed between two moving belts, which are chains with plates attached thereto.

3,691,943
TRASH COMPACTION SHELTER INCORPORATING A REMOVABLE CONTAINER
John A. Boyd, 3314 Holloman Road, Falls Church, Va.
Filed June 4, 1971, Ser. No. 150,060
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 **9 Claims**



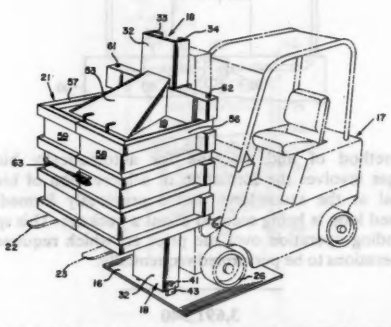
A shelter structure in the form of a building having outside walls and an access door. Trash or other material can be introduced into a trash compactor contained within the structure through either an outside wall chute door or by entering the structure through the access door and placing the trash or other material inside the compactor. The compactor functions to compress the materials into bales which are moved by a suitable transportation means into a container. The container has at least one side which forms an integral part of the outside wall of the structure and the container is adapted for easy removal by a front end loading rubbish disposal truck.

3,691,944
KITCHEN COMPACTOR
John A. Boyd, 3314 Holloman Road, Falls Church, Va.
Filed May 27, 1971, Ser. No. 147,575
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 A **8 Claims**



A kitchen compactor for the crushing of trash and other disposable wastes is disclosed. The compactor employs a hydraulic cylinder and piston assembly which is controlled by a control means that causes water from the household water supply to flow into the hydraulic cylinder. The water pressure produces motion of the piston which activates a lever arm upon which a pressing platen is mounted. The movement of the lever arm causes the pressing platen to enter into or withdraw from a waste container. When the pressing platen enters the waste container, the waste contained therein is compressed into a small bale or package of considerably smaller volume for easier disposal.

3,691,945
FORK LIFT REFUSE BIN AND BALER ACCESSORY
Jay R. Guhl, 540 Callan Avenue, San Leandro, Calif.
Filed June 14, 1971, Ser. No. 152,710
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 R **7 Claims**

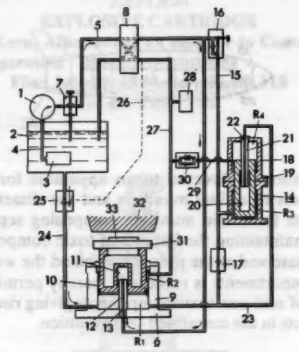


A fork lift operated refuse baler having a base upon which the forward wheels of a fork lift truck may be placed; the vertical guide secured to the base and supporting a compressor member at its upper end; and an open top refuse hopper or bin mounted for vertical reciprocation on the guide and dimensioned for receiving the compressor member into the open top of the bin, the hopper being engaged by the forks of the lift truck for elevation to the compressor member for compaction of refuse in the hopper.

3,691,946
HIGH-SPEED AUTOMATIC HYDRAULIC PRESSING SYSTEM

Shigeo Ando, No. 5-272, Suehiro-cho, Chosi, Japan

Filed May 28, 1971, Ser. No. 147,787
Int. Cl. B30b *1/30*
U.S. Cl. 100—269 B 1 Claim

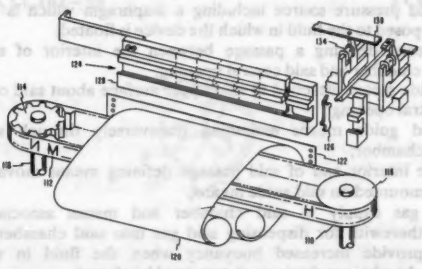


A high-speed automatic hydraulic pressing system which can effectuate a high-speed and high-pressure operation of pressing materials with an automatical repetition, employing a low-powered low-pressure oil pump. Said system comprises a low-pressure oil pump, an oil circuit for supplying oil to a pressing mechanism and an oil pressure intensifying mechanism which can work in synchronous therewith to generate a high-pressure oil. The flow of oil is switched over by a timer at an oil pressure direction changing valve provided on the oil circuit to act on the pressing mechanism and the intensifying mechanism to simultaneously restore a pressing piston and an intensifying piston to the starting position. Then, a pressure switch is urged to switch the direction changing value back to the starting neutral position to complete one cycle of operation. Thus the cycle being repeated automatically, the system according to the present invention can effectively and continuously press materials at high-speed.

3,691,947
HAMMER CONTROL FOR CHAIN PRINTER

Neil C. Berglund, and Gerald H. Petricka, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1971, Ser. No. 143,056
Int. Cl. B41j *9/38*; H02b *3/28*; B41j *1/20*
U.S. Cl. 101—93 C 8 Claims

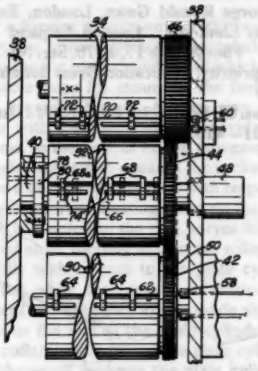


Circuitry for controlling the hammers of a chain type printer which is effective for maintaining each hammer set for a period greater than the time of one print scan (the time between alignments of successive print characters on the chain with the same print position) and less than the time of two print scans. The data to be printed by each hammer is obtained from a print buffer. After firing of a print hammer, within a time less than one print scan, a substitute piece of data is written in the location in the buffer from which the data printed by the hammer is derived, and the circuitry recognizes this substitute piece of data and does not reset the hammer at this time. Subsequently, the circuitry recognizes this substitute data and inserts still another piece of substitute data, this occurring one print scan subsequent to hammer firing. The circuitry recognizes the second substitute piece of data so that when the hammer is again addressed, a fraction of a print scan time later, the hammer is reset.

3,691,948
DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS

Donald L. Southam; William Weigl, both of Brecksville, and Thomas J. Kacmarcik, Parma Heights, all of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed April 1, 1971, Ser. No. 130,082
Int. Cl. B41f *7/06*
U.S. Cl. 101—183 8 Claims



A disconnect arrangement for a multi-unit sheet fed press in which one of the transfer cylinder gears is shifted axially out of mesh with the gear on an adjacent cylinder while remaining in mesh with the gear on another adjacent cylinder thereby interrupting the press drive train and permitting individual operation of the units. The cylinders associated with the gears which have been disengaged are so dimensioned and arranged that they may be individually rotated without the grippers on either cylinder interfering with the other cylinder.

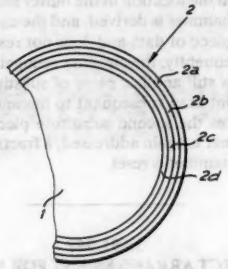
3,691,949
PRESSURE CYLINDER FOR DIRECT PLATE PRINTING MACHINES

Gualtiero Giori, and Daniel Beaune, both of Lausanne, Switzerland, assignors to De La Rue Giori S.A., Lausanne, Switzerland

Filed Oct. 27, 1970, Ser. No. 84,446
Claims priority, application Switzerland, Oct. 27, 1969, 15973/69
Int. Cl. B41f *29/04*
U.S. Cl. 101—216 8 Claims

A pressure cylinder for a direct plate printing machine comprises a steel cylinder having a peripheral coating of plastic

material. The coating has a total thickness of 0.4 mm to 1 mm and comprises an outer layer of polyurethane having a



thickness of about 2 mm and a hardness of Shore D 40° to D 60° and at least one inner layer of polyurethane having a hardness of Shore D 80° to D 90°.

3,691,950

PLATE FEEDING IN DUPLICATING MACHINES

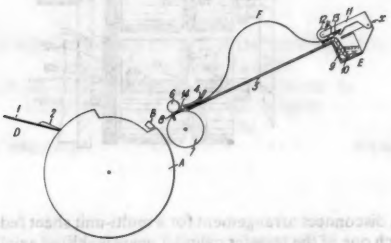
Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England

Filed March 17, 1970, Ser. No. 20,161

Claims priority, application Great Britain, March 24, 1969, 15,406/69

Int. Cl. B41f *1/30*; B05c *11/124*; B65b *11/02*

U.S. Cl. 101—415.1 **6 Claims**



A method and device for loading an offset master on to the plate cylinder of a rotary duplicating machine.

Liquid adhesive is applied to the tail of the master prior to loading thereof, on the side which after loading contacts the master cylinder of the duplicating machine, so that the tail of the master is prevented from flapping and thereby becoming damaged.

The invention is suitable for use with any form of rotary duplicating machine having an automatic clamp for engaging the leading end of a master being loaded.

3,691,951

Patent Not Issued For This Number

ERRATUM

For Class 101—247 see:
Patent No. 3,691,956

3,691,952

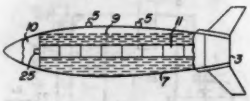
MULTILOBAR INJECTOR APPARATUS

William C. Dee, Towson, and David Sylvester, Phoenix, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 16, 1966, Ser. No. 580,567

Int. Cl. F42b *25/12*

U.S. Cl. 102—6 **8 Claims**



The invention is directed to an apparatus for producing toxic products in a final munition and the dissemination of said products from said munition comprising separate compartments maintaining the initial non-toxic components in an unreacted state and at the proper command the wall of one of the said compartments is ruptured, thereby permitting an intermixture of said non-toxic components giving rise to the said toxic products in the assembled said munition.

3,691,953

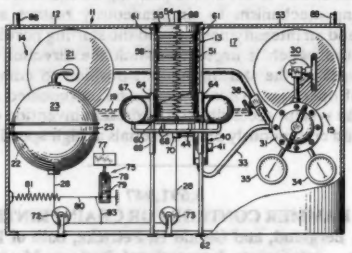
METHOD AND APPARATUS FOR CONTROLLING BUOYANCY

Neubar Kamalian, West Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 28, 1964, Ser. No. 371,141

Int. Cl. F42b *22/08*

U.S. Cl. 102—14 **9 Claims**



1. A device for controlling the depth at which an object will float comprising:

a flotation chamber having a central opening in its upper surface and an open bottom;

a pressure source in said chamber;

said pressure source including a diaphragm which is exposed to the fluid in which the device is floated;

means defining a passage between the interior of said chamber and said central opening;

guide means attached to said upper surface about said central opening;

said guide means extending transversely through said chamber;

the interior end of said passage defining means movably mounted on said guide means;

a gas supply in said chamber and means associated therewith for dispensing said gas into said chamber to provide increased buoyancy when the fluid in said chamber reaches a predetermined level; and

non-extensible means connecting the interior end of said passage defining means and said diaphragm;

said passage defining means defining a decreased air space in said chamber and releasing air therefrom when said

device is at depths less than a predetermined depth;
said passage defining means defining an increased air space in said chamber when said device is at depths greater than a predetermined depth;
said dispensing means actuable to release gas into the increased air space when the fluid in said chamber is above a predetermined level.

3,691,954

EXPLOSIVE CARTRIDGE

Forrest L. Kern, Allentown, Pa., assignor to Commercial Solvents Corporation

Filed July 29, 1970, Ser. No. 59,318
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 1 Claim

An explosive cartridge comprising a container having therein a slurry of high explosive charge, a cast booster charge and a loop of detonating cord associated with the cast booster charge and extending outside the container, the cartridge being provided with means to maintain the cast booster charge in contact with the slurry explosive charge upon application of tension on the loop of detonating cord.

3,691,955

STRESS RELIEVED GRAINS

Frank W. Jordan, McGregor, and Leonard D. Webb, College Station, both of Tex., assignors to North American Rockwell Corporation

Filed Nov. 6, 1967, Ser. No. 682,726
Int. Cl. F42b *1/02*
U.S. Cl. 102—99 2 Claims

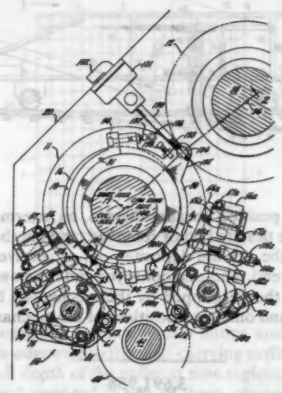
An internally ported grain having an active solids loading of from 85 to 98 percent. The configuration of the port is determined so as to provide a desired internal burning surface and relief for stored strain energy.

3,691,956

FLAT ADJUSTING AND THROW-OFF ARRANGEMENT FOR FORM ROLLER IN PRINTING PRESS

Cyril P. James, La Grange, and Bohdan Washchynsky, Westchester, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,362
Int. Cl. B41f *13/28, 31/34*
U.S. Cl. 101—247 11 Claims



A mechanism for achieving adjustment and throw-off of the cylinders and rollers of a printing press which includes eccentric collars for mounting the plate cylinder and which includes sockets with adjustable stops for mounting the form rollers, the sockets being inwardly biased. A cam ring which is generally concentric with the plate cylinder provides sloping stop surfaces, or cams, in the path of biased movement of the stops on the form roller sockets to position the sockets so that the form rollers have a desired width of flat with respect to the plate on the plate cylinder. An adjusting screw on the frame of the press, and which is coupled to the ring, serves to rock the ring through a limited angle thereby to cam the roller sockets outwardly or inwardly with respect to the plate cylinder to vary the width of flat while the press is in motion. In the preferred embodiment the cam ring axis is made slightly eccentric with respect to the axis of the plate cylinder so that when the eccentric collars which mount the plate cylinder are rotated to achieve throw-off between the plate cylinder and the impression cylinder, the relative rocking of the cam ring causes the stop surfaces thereon to move radially outward of the plate cylinder for simultaneous and automatic throw-off of the form rollers from the plate cylinder. Each form roller socket assembly has an arm, a bearing mount pivoted thereon, and an adjustable stop member. A first adjusting screw with an associated spring is interposed between the arm and the bearing mount for adjusting the roller with respect to the ink drum. A second adjusting screw, with a spring is interposed between the arm and the stop member for adjusting the roller with respect to the plate cylinder. Each adjusting screw has a deeply detented seating member for shifting the screw endwise against its spring for achieving independent throw-off without affecting the adjusted condition of the screw.

3,691,957

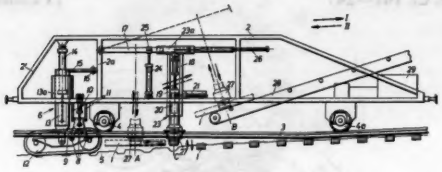
MOBILE APPARATUS FOR LAYING AND REMOVING TRACK TIES ALONG A RIGHT OF WAY

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, A1010 Vien, Austria

Filed May 5, 1971, Ser. No. 140,421
Claims priority, application Austria, June 1, 1970, 4894
Int. Cl. E01b *29/06*
U.S. Cl. 104—9 8 Claims

A vertically adjustable tie gripping mechanism is mounted for movement through a path extending in the direction of the

right of way between end positions respectively adjacent a rail lifting means and one end of an elongated tie conveyor. A guide supports the mechanism so that it is located centrally between the track rails in one end position wherein the mechanism may be vertically adjusted and rotated to swing the ties between a first position transverse of the right of way



and a second position parallel thereto, an intermediate position where the ties are laid or removed, and another end position wherein the ties are deposited on, or received from, the one conveyor end. This one conveyor end is below the path of movement of the tie gripped by the mechanism between the intermediate and other end positions of the mechanism.

3,691,958

Patent Not Issued For This Number

3,691,959

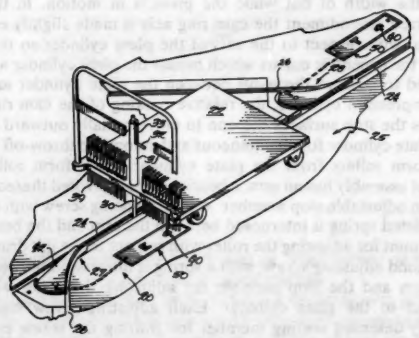
TRUCK TOW CONVEYOR SWITCHING APPARATUS

Horace M. Swartz, Doylestown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 5, 1971, Ser. No. 140,397

Int. Cl. B61j *3/04*

U.S. Cl. 104—88 **23 Claims**



A mechanical switching apparatus for use in an automated truck tow conveyor system has a switch plate for diverting coded trucks from a main slot in a reference surface to a spur slot intersecting the main slot. A reader head, located upstream from the switch plate and in line with a given code probe on the truck, actuates a cable operatively connected to the switch plate to move the switch plate from a position in which the spur slot is closed to an open position. Improved latch means are provided on the reader head to prevent inadvertent triggering of the reader head and inadvertent opening of the switch plate. A full spur device prevents the switch plate from diverting more than a predetermined number of trucks into the spur slot.

3,691,960

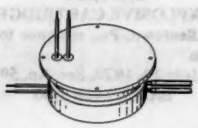
CRYOGENIC MAGNET FORCE APPLICATION MEANS AND METHOD

David L. Atherton, Toronto, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada

Filed March 30, 1970, Ser. No. 23,603

Int. Cl. B61b *13/08*; H01f *7/00*; H02k *41/00*

U.S. Cl. 104—148 SS **18 Claims**



Magnetic force developed between a cryogenic magnet and a field is transferred to a load by a third field forming member which is spaced from but which magnet reacts with the cryogenic member and the third field forming member is joined to a load by a massive support.

3,691,961

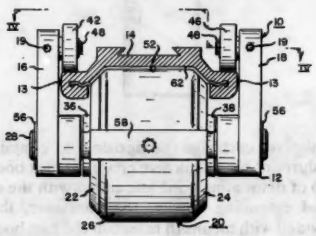
FLUID PRESSURE DEVICE

Maurice I. Zeldman, and Edward G. Schechter, both of Pittsburgh, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 15, 1970, Ser. No. 55,130

Int. Cl. B61b *13/12*

U.S. Cl. 104—155 **3 Claims**



A fluid pressure device comprising a carriage and a track, the carriage adapted to ride on and be guided by the track, a fluid pressure-containing membrane and a sealing membrane, each fixedly attached to the track, the fluid pressure membrane enclosing a cavity in the track, pressurizing and exhausting means connected to the track at the cavity to alternately pressurize and exhaust the fluid medium, the carriage having at least two rollers journaled therein, the roller adapted to cooperate with the pressure-containing membrane so as to move along the track in response to the fluid pressure, the sealing membrane effecting a pressure seal between the pressure-containing membrane and the track.

3,691,962

BOGIES OR CHASSIS FOR ROLLING STOCK WITH A PLURALITY OF AXLES

Robert Mouneydiere, Le Perreux-sur-Marne, France, assignor to Creusot-Loire, Seine, France

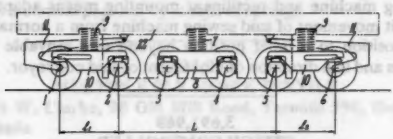
Filed May 17, 1971, Ser. No. 144,071

Int. Cl. B61f *5/38*

U.S. Cl. 105—182 R **1 Claim**

A bogie for rolling stock includes a plurality of groups of axles, of which at least one is a steering axle group. A non-load bearing T-shaped draught bar is pivotally connected at one end to the bogie chassis, with each of the two arms of the T resting on one axlebox of the steering axle. Load supporting beams between the steering axle and the adjacent axle of the

steering axle group bear on the axleboxes of the steering axle in a manner permitting inclination of the beams with steering



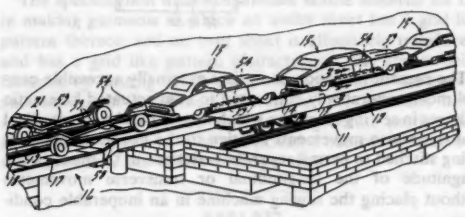
or on a canted track; with well-defined inclination of the axleboxes of the steering axle according to the draught bar being ensured by guide rods linking each axlebox to its beam.

3,691,963

METHOD AND APPARATUS FOR SHIPPING MOTOR VEHICLES

Raymond M. Krokos, Detroit, and William K. MacCurdy, Plymouth, both of Mich., assignors to Evans Products Company

Filed May 14, 1970, Ser. No. 37,250
Int. Cl. B60p 7/08; B61d 45/00
U.S. Cl. 105—368 R 8 Claims



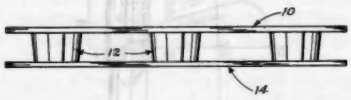
A method and apparatus for loading and tying down motor vehicles onto a transporting railway car. Chains are fastened to the frame of the motor vehicle and two rigid members that are guided in a track. As the vehicles are moved along a loading ramp toward the railway car, the distance between the ends of the chains, in a vertical direction, is increased to tensioning the chains and tie down the vehicles.

3,691,964

PALLET

Louis P. Larson, Glendale; Edward F. Repking, St. Louis, both of Mo., and Gary L. Wagner, Covington, La., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 19, 1970, Ser. No. 81,803
Int. Cl. B65d 19/18
U.S. Cl. 108—51 9 Claims



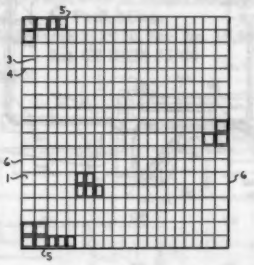
A pallet with single or double decks detachably fastened to pallet feet. The feet are anchored to an upper deck by twisting them into place. The upper deck is apertured on its under side to present tabs for anchoring the feet. The feet are hollow conical frustum bodies and may be stiffened by internally carried cores.

3,691,965

PALLET

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics Incorporated, Erie, Pa.

Filed Oct. 9, 1970, Ser. No. 79,549
Int. Cl. B65d 19/18
U.S. Cl. 108—58 2 Claims



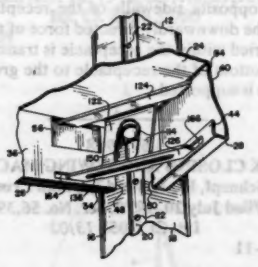
A pallet consisting essentially of a lattice and longitudinal and cross ribs edgewise to the load-carrying surfaces. The ribs extend the full depth of the pallet at nine regions spaced from each other and arranged in sets of three, aligned lengthwise, crosswise and diagonally of the pallet. The spaces between the sets provide fork lift openings on both the sides and ends of the pallet. The lower ends of the full depth ribs are tied together by integral lattice elements extending crosswise of the pallet.

3,691,966

CORNER ATTACHMENT FOR LIGHTWEIGHT STEEL SHELVING

Irwin J. Ferdinand, Glencoe; Irwin R. Kulbersh, Morton Grove, and Gerald D. Cassiere, Chicago, all of Ill., assignors to The Hirsh Company, Skokie, Ill.

Filed Jan. 25, 1971, Ser. No. 109,310
Int. Cl. A47b 9/00
U.S. Cl. 108—144 6 Claims

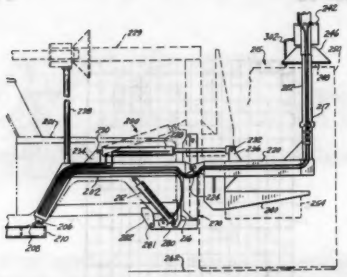


Lightweight, easily assembled and dis-assembled knockdown shelving is described wherein particular shaped clip members are provided that snap-fit into the side and end flanges at the cut-out corners of the shelves and present a notched opening adjacent the securement apertures of the shelving post that facilitate the insertion and reception therein of the securement means already located on a supporting post, such as a fastening screw or bolt. The clips not only provide a rigidifying support across the cut-out corners of the shelves, but also an initial weight supporting level positioning of the shelf followed by the tensioning for direct weight supporting abutment of the flange edges against the sides of the post.

3,691,967
MOBILE REFUSE COMPACTING APPARATUS

Donald Mettetal, Jr., 19301 Shiawassee, Detroit, Mich.

Filed June 25, 1970, Ser. No. 49,635
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 7 Claims



A mobile apparatus for compacting refuse disposed in a separate receptacle of the type having an opened top portion through which refuse is normally deposited. One example of the invention is in the form of a self-propelled vehicle having an upright ram positioning mechanism which includes a plurality of members pivotally connected in an end-to-end fashion; each member having a hydraulically actuated cylinder for selectively pivoting the members relative to one another. The top member of the ram positioning mechanism supports a piston actuated ram which is adapted to be positioned above the opened top portion of the receptacle at selected spaced positions. The ram is actuated in an up and down fashion to compact the refuse therebeneath at each spaced position.

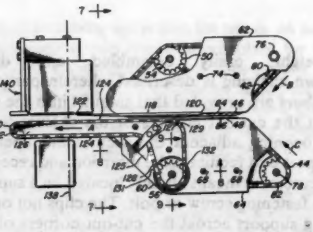
A second example of the invention is in the form of a ram positioning mechanism adapted to be carried at the front end of a conventional vehicle, such as a truck. The ram positioning mechanism includes a hydraulically actuated piston which selectively moves a ram in an up and down fashion to compact the refuse contained within the receptacle. The ram is moved to spaced positions across the receptacle opening by positioning the ram carrying vehicle at selected distances from the front wall of the receptacle.

Each example of the present invention includes means for engaging the opposite sidewalls of the receptacle in such a manner that the downwardly directed force of the ram against the refuse carried within the receptacle is transmitted directly through the bottom of the receptacle to the ground on which the receptacle is supported.

3,691,968
SACK CLOSING AND SEWING MACHINE

Raymond D. Schnepf, Rt. 1, Box 42, Queen Creek, Ariz.

Filed July 20, 1970, Ser. No. 56,392
Int. Cl. D05b *13/02*
U.S. Cl. 112—11 9 Claims

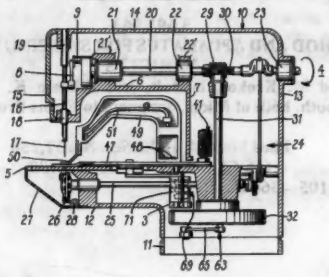


A sack closing and sewing machine having a conveyor for conveying sacks with contents therein, a sack closing means above said conveyor, a sewing machine adapted to receive the upper ends of sacks and sew them closed adjacent to said closing means, a movable guide means extending from said closing means to a position beyond the normal sewing position of said sewing machine and rectilinear mounting means adapted to permit movement of said sewing machine from a normal sewing position to a relief position beyond said movable guide means and in a direction of movement of said conveyor.

3,691,969
STITCH CONTROLLER

Nereo Bianghi, Pavia, Italy, assignor to Necchi S.p.A.

Filed April 6, 1970, Ser. No. 25,659
Claims priority, application Italy, Apr. 14, 1969, 32409-A/69
Int. Cl. D05b *3/04*
U.S. Cl. 112—70 9 Claims

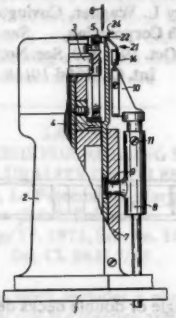


The present invention comprises externally accessible control means operatively connected to cam actuated kinematic linkages in sewing machines which impart precise longitudinal and transverse movements relative to the needle to material being stitched to permit separate variations to be made in the magnitude of the longitudinal or transverse movements without placing the sewing machine in an inoperable condition.

3,691,970
DEVICE ON SEWING MACHINES FOR TRIMMING MATERIAL

Herbert Wenz, Kaiserslautern, Germany, assignor to Firma G.M. Pfaff AG, Kaiserslautern Pfalz, Germany

Filed Feb. 29, 1970, Ser. No. 59,107
Claims priority, application Germany, Aug. 6, 1969, G 69 31 124.6
Int. Cl. D05b *37/06*
U.S. Cl. 112—127 2 Claims



Device on sewing machines for trimming edges of the material with a cutter that is mounted for swinging movement on a cutter support adapted to make evading movements and

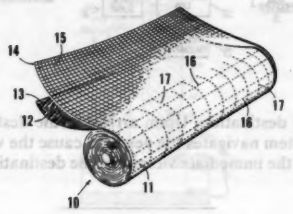
which has an edge disposed in a vertical plane, as well as an angular protecting bridge disposed horizontally above the edge where the cutter support is displaceably mounted in a vertical guide means of a support member arranged on a cutter rocking lever and which is adjustable in height and is held in a central position by means of springs.

3,691,971

MULTIPLE PLY MOIRE TEXTILE

Robert W. Clarke, 90 Old Mill Road, Toronto 590, Ontario, Canada

Filed June 16, 1971, Ser. No. 153,524
Int. Cl. B32b *7/08*
U.S. Cl. 112—440 **3 Claims**



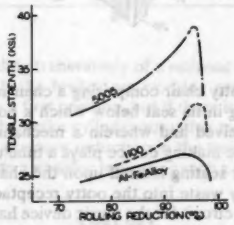
The specification discloses a moire textile material for use in making garments in which an under sheet has a grid like pattern thereon and an over sheet is effectively translucent and has a grid like pattern characteristic, the sheets being fastened by basting which can be removed after the cutting and sewing of a garment therefrom, the garment being adapted by virtue of the material to generate motion suggestive moire patterns of an accentuated nature responsive to slight motion of the wearer of the garment.

3,691,972

ALUMINOUS METAL ARTICLES AND METHOD

Linton D. Bylund, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 712,314, Jan. 16, 1968, Pat. No. 3,571,910, which is a division of Ser. No. 660,132, Aug. 11, 1967, Pat. No. 3,397,044, which is a continuation-in-part of Ser. No. 573,776, Aug. 8, 1966, abandoned, which is a continuation-in-part of Ser. No. 379,782, July 2, 1964, abandoned. This application July 9, 1970, Ser. No. 889,790
Int. Cl. B21d *51/00;* **B21b** *15/00;* **B21c** *37/02*
U.S. Cl. 113—120 H **15 Claims**



Aluminum foil and other wrought articles including drawn and ironed can bodies are produced from aluminum base alloys containing up to about 2.5 percent iron, having a low work hardening rate above 75 percent reduction and sufficient ductility at high cold work levels to permit cold working to the extent of at least 90 percent without the necessity of annealing or stress relieving.

3,691,973

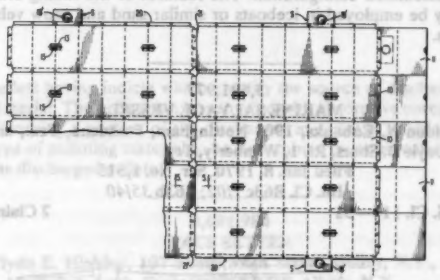
Patent Not Issued For This Number

3,691,974

PORTABLE BARGE

Donald S. Selford, Sr., Inver Grove Heights, and Robert R. Selford, St. Paul Park, both of Minn., assignors to Twin City Shipyard, Inc., St. Paul, Minn.

Filed March 3, 1970, Ser. No. 15,997
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 F **11 Claims**



The invention relates to a sectional, portable barge construction which is transportable over land, each section of which is subsequently lowered into a body of water and assembled into a predetermined overall size and shape preparatory for use.

3,691,975

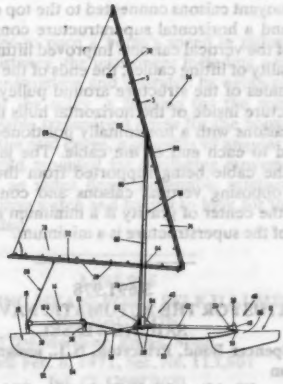
Patent Not Issued For This Number

3,691,976

SAILING CRAFT

Donald J. M. Wilson, Peace Boats, Inc., 54 Lewis Wharf, Boston, Mass.

Filed Nov. 16, 1970, Ser. No. 89,951
Int. Cl. B63b *35/00*
U.S. Cl. 114—39 **11 Claims**



A multi-hull sailing craft has three hulls arranged in a generally triangular plan configuration in which two of the hulls are located aft of the third, forward hull in a generally Y-

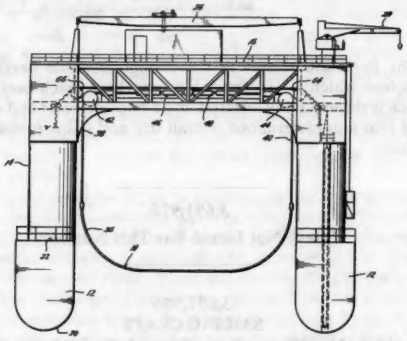
shaped configuration. The hulls are connected by three spars, each of which radiates from a central connector towards its associated hull. The forward hull is pivotally connected to its spar so that it may act as a rudder and provide steering. A passenger deck spans the distance between the transversely spaced aft hulls and is connected to the hulls by stanchions which extend downwardly from the deck. The central connector also includes an upwardly opening mask socket which receives the lower end of the mast to support the mast without the use of stays or shrouds. The aft hulls preferably are asymmetrical in cross section but are symmetrical in a fore and aft direction. All of the spars of the sailing craft, including those associated with the mast and sail may be disassembled into components of smaller length approximately equal to that of the aft hulls to facilitate transporting of the sailing craft in a disassembled configuration. The features of the sailing craft may be employed in iceboats or similar sand and snow vehicles.

3,691,977

MARINE SALVAGE VESSEL

Weldon N. Eubanks, 1901 Nottingham, Pasadena, Tex., and Doyle D. Short, Rt. 1, Wimberly, Tex.

Filed Jan. 8, 1970, Ser. No. 1,515
Int. Cl. B63c *7/02*; B63b *35/40*
U.S. Cl. 114—51 **2 Claims**



A marine salvage vessel having two elongated parallel horizontal hulls having ballast compartments with the lower portion of the hulls being arcuate and the tops being flat and of sufficient displacement to support the vessel and payload while floating on the water with a plurality of vertically extending buoyant caisons connected to the top of each horizontal hull, and a horizontal superstructure connected between the tops of the vertical caisons. Improved lifting means including a plurality of lifting cables, the ends of the cable leading to opposite sides of the structure around pulleys carried by the superstructure inside of the horizontal hulls and adjacent the vertical caisons with a horizontally positioned hydraulic jack connected to each end of the cable. The jacks at opposing ends of the cable being supported from the superstructure between opposing vertical caisons and connected together whereby the center of gravity is a minimum and the required strength of the superstructure is a minimum.

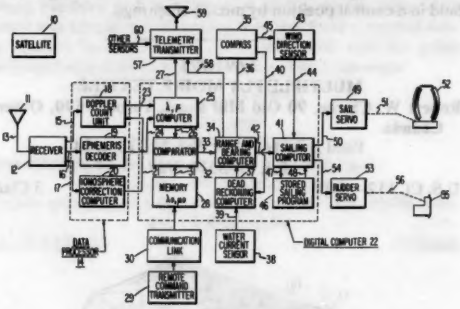
3,691,978

APPARATUS FOR THE AUTOMATIC NAVIGATION OF A SAILING VESSEL

Donald Spencer Bond, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 18, 1969, Ser. No. 886,300
Int. Cl. B63h *25/00*
U.S. Cl. 114—144 **9 Claims**

A navigation system for a sailing vessel which automatically sails the vessel from its present location to a destination location. The system responds to the prevailing wind conditions and characteristics of the craft to either sail directly or tack to



the desired destination. Upon arrival at the destination location the system navigates the vessel to cause the vessel to keep a station in the immediate vicinity of the destination location.

3,691,979

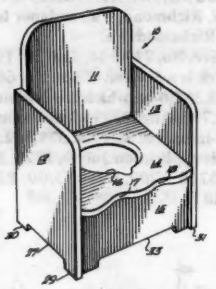
Patent Not Issued For This Number

3,691,980

MUSICAL POTTY CHAIR

John F. Shastal, 2600 S.W. 53rd Avenue, West Hollywood, Fla.

Filed April 27, 1971, Ser. No. 137,815
Int. Cl. G08b *3/00*
U.S. Cl. 116—67 **9 Claims**

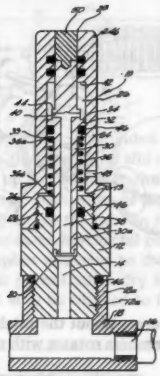


A musical potty chair comprising a chair member having a central opening in its seat below which a potty receptacle is removably received and wherein a mechanical, electrically-energized music making device plays a tune upon a child first being seated or seating himself upon the chair and thereafter liminating body waste into the potty receptacle, is described. The energizing circuit for the music device has a first normally open-circuited electrical switch mounted in a leg of the chair and adapted to be closed-circuited by the weight of the child sitting on the chair, and a second normally open-circuited electrical switch associated with the potty receptacle when in position below the seat opening and operative to be closed-circuited in response to the added weight of body waste deposited into the potty receptacle to complete the energizing circuit to the music making device and thereby play a rewarding tune.

3,691,981
HOSE RUPTURE INDICATOR

Prabhakar B. R. Rao, Cincinnati, Ohio, assignor to Fluidics, Inc., Cincinnati, Ohio

Filed Feb. 4, 1972, Ser. No. 223,434
Int. Cl. G01l 19/12
U.S. Cl. 116—70 12 Claims

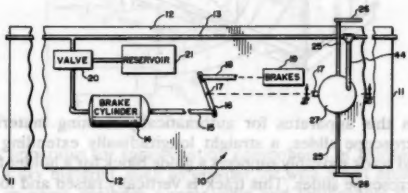


A hose rupture indicator adapted to be secured in communication with a fluid line containing hydraulic fluid under pressure. When pressure in the line drops below a predetermined level, an elongated indicator is extended out of the rupture indicator housing to provide an indicator which may be felt in the dark or in a restricted location to immediately apprise an operator which line of a plurality of fluid lines has in fact ruptured.

3,691,982
RAILROAD CAR AIR BRAKE FAILURE INDICATOR

Vaughn T. Hawthorne, 5223 Deerfield Road, Mechanicsburg, Pa.

Filed April 21, 1971, Ser. No. 136,050
Int. Cl. G01l 19/12
U.S. Cl. 116—70 7 Claims



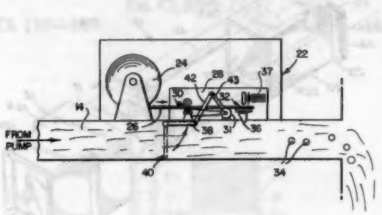
A shaft extending transversely of a railroad car has flags on each end of it. If the brakes are working properly the shaft holds the flags in a first position, but if there is too little or too much travel of the brake cylinder actuating member upon the occurrence of a pressure reduction in the train line, the shaft rotates the flags to a position indicating such a malfunction.

3,691,983
IDENTIFICATION SYSTEM FOR WATER POLLUTION DETECTION

Edward L. Greenwood, 3721 S. Queensgrove Circle, Virginia Beach, Va.

Filed Sept. 22, 1970, Ser. No. 74,255
Int. Cl. G01d 21/00
U.S. Cl. 116—114 R 14 Claims

In a method of identifying sources of water pollution, buoyant indicator elements which identify the source of polluting material are injected into the polluting material and discharged with the material into a body of water to enable the pollution to be traced to its source. In a preferred embodiment, the indicator elements comprise a plurality of buoyant

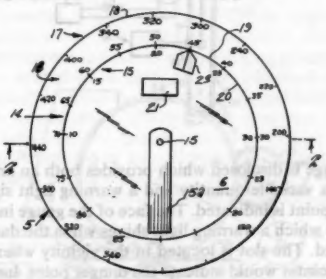


pellets having indicia which identify the source of discharged material. The pellets can be provided with absorptive cores for absorbing a portion of the discharged material to enable the type of polluting material to be determined by examination of the discharged pellets.

3,691,984
PACE SETTER

Clyde E. Hinkley, 107 South Main Street, Holley, N.Y., and William A. Lusk, Eagle Harbor Road, Albion, N.Y.

Filed Nov. 29, 1968, Ser. No. 779,749
Int. Cl. G01p 1/06
U.S. Cl. 116—116 2 Claims



A speedometer to pace a horse's speed in pulling a sulky over a pre-set distance, the instrument including a speedometer of known construction and operated by cable connection with a wheel of the sulky, a housing for the speedometer proper, a removable transparent cover for the housing, a dial visible through the said cover, a plurality of angular scales on the dial, a pointed mounted for oscillating movement along said scales and an index finger adjustable relatively to the scales; use of a stop watch and having to look for the quarter mile pole is oviated.

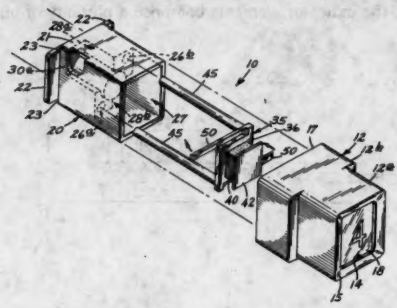
3,691,985
SPRING BIASING MEANS FOR A SELF-ILLUMINATING PUSHBUTTON

Jon L. Otterlei, 1704 Merilane, Edina, Minn.

Filed Feb. 8, 1971, Ser. No. 113,501
Int. Cl. G09f 9/00
U.S. Cl. 116—124 5 Claims

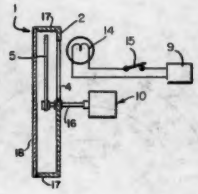
A self-illuminating pushbutton having a light reflective surface carried by a supporting platform slidably moveable within a casing toward and away from a character plate mounted adjacent an aperture at one end of the casing. An elongated

resilient element integrally molded at each of two diagonally opposed corners of the supporting platform engages the inner



walls of the casing so as to bias the supporting platform and light reflective surface away from the character plate, thereby making the character normally appear non-luminous.

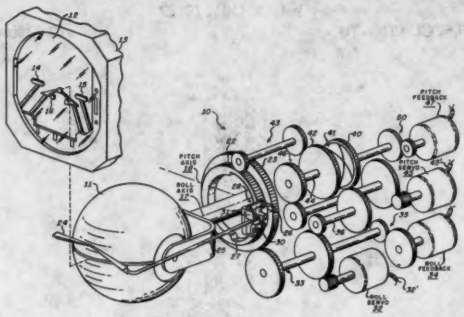
3,691,986
GAUGE AND LIGHT SIGNAL
Elias Gancher, 477 Farmington Avenue, Waterbury, Conn.
Filed June 29, 1970, Ser. No. 50,658
Int. Cl. G09f 9/00
U.S. Cl. 116—129 **4 Claims**



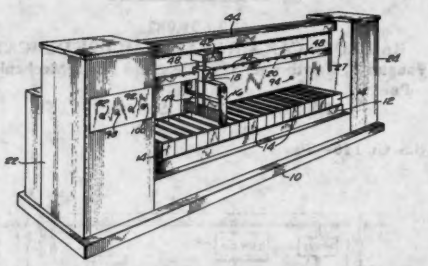
A gauge is disclosed which provides both an analog indication of a variable quantity and a warning light signal when a danger point is indicated. The face of the gauge includes a slot through which a warning light shines when the danger point is indicated. The slot is located in the vicinity where a conventional pointer would indicate the danger point. Instead of having a conventional slender pointer attached to and rotating on a pinion shaft of a gauge movement, the gauge of the present invention has attached to the pinion shaft a screen in the form of a sector of a circle. The screen subtends an angle at least equal to the entire range of the variable. One edge of the screen is suitably marked as a narrow pointer.

3,691,987
INDICATOR MECHANISM FOR NAVIGATION INSTRUMENTS
Richard R. Strock, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed Jan. 14, 1971, Ser. No. 106,466
Int. Cl. G01c 23/00
U.S. Cl. 116—129 R **18 Claims**

An indicator mechanism for navigational instruments comprising first and second members mounted for rotation with respect to each other and with respect to the instrument housing. Drive means are included for rotating the first and second members at the same angular velocity with respect to each other relative to the housing in response to a roll signal and for rotating one of the members with respect to the other in response to a pitch signal. An indicator is coupled to the first and second members so that a first motion is imparted thereto about the roll axis of the instrument when the first and second members rotate at the same angular velocity and a second motion is imparted thereto about the pitch axis of the instrument when one of the members rotates with respect to the other.



3,691,988
APPARATUS FOR AUTOMATICALLY STAINING MICROSCOPE SLIDES
Benjamin Earl Clarke, Milwaukee, Wis., assignor to Thermolyne Corporation, Dubuque, Iowa
Filed April 5, 1971, Ser. No. 131,189
Int. Cl. B05c 3/04
U.S. Cl. 118—6 **5 Claims**



In this apparatus for automatically staining material on microscope slides, a straight longitudinally extending overhead track movably supports a guide block for a holder for the microscope slides. This track is vertically raised and lowered while remaining level. When the track is raised a controlled chain drive moves a carriage assembly along an electric guide rail to move the guide block along the overhead track stopping it in positions above selected solution containers mounted on a container support. The track is lowered to immerse the slides into the solution in the selected container. A timing belt and timing switch control the duration of time that the slides are immersed in the solution of the selected container. At the end of the treatment the guide block is stopped in an unloading position or may be left in the last container containing an Xylene solution. The solution in the containers is gently agitated by rocking the container support on a longitudinally extending axis.

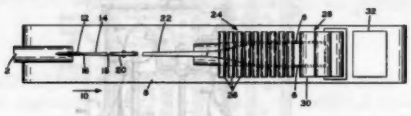
3,691,989
Patent Not Issued For This Number

3,691,990

APPARATUS FOR APPLYING ADHESIVE TO THE EDGES OF A SLIT TUBE

Howard R. McCabe, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 13, 1971, Ser. No. 143,140
Int. Cl. B05c *1/08*, *11/12*
U.S. Cl. 118—35 4 Claims



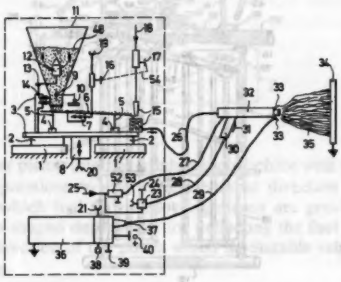
Foamed tubular insulation is provided with a slit down its longitudinal length so that it may be slid over a pipe. The apparatus herein opens up the tubing so that an adhesive coater may apply an adhesive to both edges of the slit in the tubing. A flattening structure opens up the tube so that the two surfaces to be coated are in the same horizontal plane, and a roll coating structure then applies adhesive to the edges in the same plane. The adhesive is permitted to dry and is then later solvent actuated when it is to be utilized to fasten the two edges together.

3,691,991

APPARATUS FOR SPRAY-COATING COMPONENTS

Manfred H. Luderer, Weiller Zum Stein, and Anton Ettenhofer, Winnenden, both of Germany, assignors to Atlas Copco Aktiebolog, Nacka, Sweden

Division of Ser. No. 819,216, April 25, 1969, Pat. No. 3,637,135. This application Nov. 3, 1971, Ser. No. 195,270
Claims priority, application Germany, Apr. 26, 1968, P 17 71 263.9; Jan. 14, 1969, G 69 01 158.1; Mar. 27, 1969, P 19 15 651.1
Int. Cl. B05c *5/02*
U.S. Cl. 118—629 19 Claims



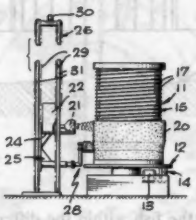
An apparatus for spray-coating components or workpieces with a dry material, such as powder, or with a wet material, such as paint, includes a removable and replaceable supply container for the coating material. When the container is mounted in the apparatus, an agitator therein is connected to an air supply to agitate the material in the container. The material is supplied from the container to a feeding trough through a regulatable discharge opening, the trough being vibrated parallel to the direction ofmovement of the material therealong and the support for the container being vibrated vertically. The trough delivers the material to an injector connected to asource of compressed air with the mixture of compressed air and material being directed through a closed conduit or the like to a spray-gun havinghigh voltage electrodes at its outlet or discharge end. A control panel is provided with controls for selecting the voltage and the polarity of the electrodes at the spray-gun outlet, and for regulating the vibration effect and the supply of air to the apparatus. The electrical operation iseffected underthe control of air pressure operated switches to which air is supplied responsive to operation of air supply control members.

3,691,992

APPARATUS FOR TRUING MORTAR COATING

Paul K. Beemer, Laguna Beach, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Dec. 26, 1968, Ser. No. 786,968
Int. Cl. B05c *11/02*
U.S. Cl. 118—107 10 Claims



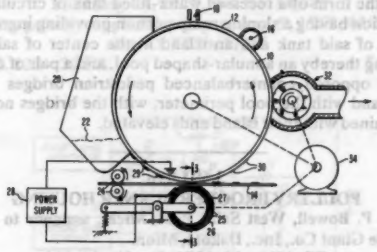
Apparatus for truing a cement mortar coating on a concrete pipe body or the like including means for supporting and rotating the body and a power-driven rotary brush mounted to be moved longitudinally of the body.

3,691,993

APPARATUS FOR TRANSFERRING DEVELOPED IMAGE

Konrad A. Krause, Mountain View, and Yaqub Moradzadeh, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,038
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 8 Claims



An apparatus for transferring a developed electrostatic image from an image-bearing member to a medium such as copy paper in response to the evenly distributed field produced by a D.C. biased metallized fiber brush roller which contacts the copy paper to produce the transfer.

3,691,994

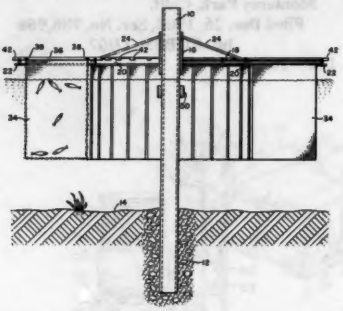
FLOATING FISH ENCLOSURE

Bill N. McPherson, Littleton, Mass., assignor to Aqua-Genetics Inc., Concord, Mass.

Filed May 6, 1971, Ser. No. 140,787
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 4 Claims

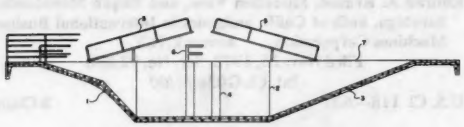
A plurality of porous enclosures are provided to segregate groups of fish for testing and commercial purposes. The enclosure mesh is small enough to retain the fish, yet large enough to permit water flow. The enclosures are arranged circle fashion about a central shaft imbedded in the pond floor, and held in place between two concentric rings by a shaped support frame engaged at either end by the rings. A rotational sleeve sits about the shaft and is joined to the rings by spoke-

like members, and flotation elements are provided for the ring-sleeve structure. The assembly is regularly rotated around



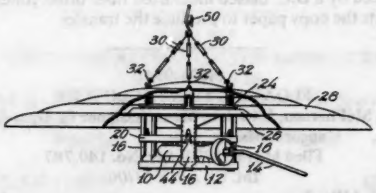
the shaft, so that the fish within the different enclosures are kept segregated yet exposed to the same environment.

3,691,995
SWIMMING POOL FOR HORSES
Glen Melvon Little, P.O. Box 244, Burns, Oreg.
Filed April 13, 1970, Ser. No. 27,644
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **4 Claims**



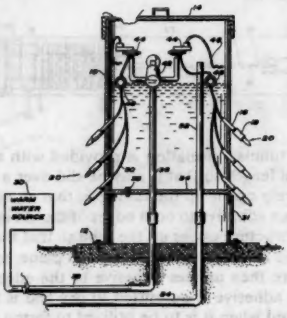
A swimming pool for use in exercising and conditioning horses in the form of a recessed water-filled tank of circular configuration having a sloping ramp portion providing ingress and egress of said tank and an island in the center of said tank creating thereby an annular-shaped pool, and a pair of diametrically opposed counterbalanced pedestrian bridges linking the island with the pool perimeter, with the bridges normally maintained with their island ends elevated.

3,691,996
POULTRY BROODER BURNER HOUSING
James P. Bowell, West Saint Paul, Mich., assignor to Miller, Little Giant Co., Inc., Dakota, Minn.
Filed Nov. 20, 1970, Ser. No. 91,444
Int. Cl. A01k *31/18*
U.S. Cl. 119—32 **10 Claims**



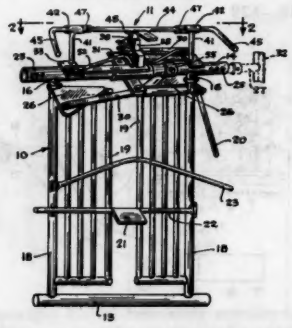
A burner housing for a poultry brooder in which a gas burner is suspended in an open framework beneath a ceramic heat deflector. The novelty lies in constructing the open framework with interlocking tabs and bends so that the entire burner housing may be assembled and disassembled without the use of nuts, bolts, or other cumbersome fasteners and with a minimum of tools.

3,691,997
TEMPERATURE CONTROLLED WATER DISPENSING DEVICE FOR ANIMALS
Clifford V. Hatch, P.O. Box 6654, Lubbock, Tex.
Filed May 7, 1971, Ser. No. 141,235
Int. Cl. A01k *9/00*
U.S. Cl. 119—71 **11 Claims**



Animals such as hogs are provided drinking water from drinking nipples which are connected into the side of a barrel-like container. To prevent the nipples from becoming frozen in cold weather, water is circulated directly into and out of the nipples, responsive to a temperature measuring element.

3,691,998
LIVESTOCK HEADGATE
Wilbert L. Luinstra, May City, Iowa
Filed Nov. 5, 1970, Ser. No. 87,127
Int. Cl. A61d *03/00*
U.S. Cl. 119—98 **7 Claims**

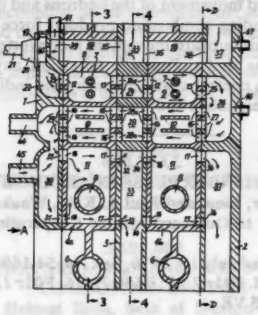


A livestock headgate having a stanchion with a pair of swinging gates, a synchronizing mechanism for closing the gates simultaneously, stop latches to hold the gates in a closed position and adjustable stop means for limiting the size of the opening between the gates.

3,691,999
LIQUID COOLED HOUSING FOR ROTARY PISTON ENGINES
Rolf Lechler, Neckarsulm, and Johannes Steinwart, Bad Friedrichshall, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Wurttemberg and Wankel G.m.b.H., Lindau/Bodensee, Germany
Filed May 28, 1970, Ser. No. 41,197
Claims priority, application Germany, May 31, 1969, P 19 27 859.2
Int. Cl. F02b *53/00*; F01p *3/00*
U.S. Cl. 123—8.01 **5 Claims**

The invention relates to a liquid cooled housing for rotary piston engines, in particular internal combustion, consisting of

at least one annular shell and two end parts, the housing having an inlet and an outlet connection for the cooling liquid,



and the shell and end parts containing chambers in communication with each other and traversed by cooling liquid.

3,692,000

Patent Not Issued For This Number

3,692,001

CIRCULAR PISTON INTERNAL COMBUSTION ENGINE

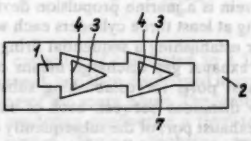
Erwin Hejj, Essen, Germany, assignor to Fried-Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Division of Ser. No. 812,524, March 4, 1969, Pat. No. 3,610,209. This application Feb. 16, 1971, Ser. No. 11,552

Claims priority, application Germany, March 6, 1968, P 16 01 821.6

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.09 **11 Claims**



A circular piston internal combustion machine with trough-shaped depressions in the circumferential direction of the piston, in which fuel flow deflecting means are provided in said trough-shaped depressions for deflecting the fuel flow in the axial direction of the piston which is rotatable relative to the housing.

3,692,002

ROTARY INTERNAL COMBUSTION ENGINE

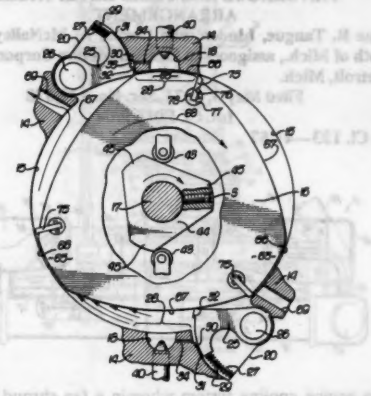
Robert H. Williams, Rt. 2, Bandera, Tex.

Filed Feb. 8, 1971, Ser. No. 113,189

Int. Cl. F01c *19/02*; F02b *53/10*

U.S. Cl. 123—8.11 **3 Claims**

A rotary engine having a cycle which includes the phases of pre-compressed fuel injection, combustion-expansion and exhaust and including a stator in which a cylindrical cavity is formed concentric with a given axis, a shaft being mounted on axial bearings of said stator to support a rotor within said cavity having three circumferentially spaced head portions, higher radially than the intervening peripheral portions and closely rotatably slideably fitting said cavity. Two diametrically opposed combustion stations are provided at opposite points in said stator, each said station including a pocket in the face of said cavity in an area small enough to be practically sealed shut when one of said rotor head portions is traveling past said area. An abutment holding chamber is formed radially outwardly in said cavity just in advance of each combustion pocket area, an abutment rocker being pivotally mounted in each chamber and biased into constant line sealing contact with said rotor. Spent gas exhaust ports are provided just behind these abutments. High compression fuel injection means is cam operated to inject a fuel charge into each pocket while



the latter is shut and ignite this just before it is uncovered. Each abutment is jointly biased against the rotor by spring and gaseous pressure. Fuel and air are separately injected into said combustion pockets in timed relation with the rotation of said rotor in accordance with conventional diesel fuel injection procedures.

3,692,003

FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

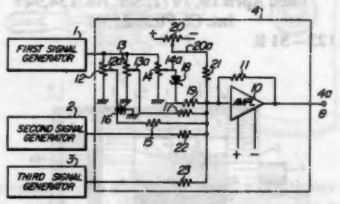
Hisato Wakamatsu, Kariya, and Kunio Endo, Anjo, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed July 14, 1970, Ser. No. 54,681

Claims priority, application Japan, Aug. 9, 1969, 44/63166

Int. Cl. F02m *51/06*

U.S. Cl. 123—32 EA **5 Claims**



A fuel control system for internal combustion engines comprising a first control signal generator to produce an output voltage corresponding to an operating parameter of the engine, and a signal processing circuit including a non-linear means for deriving from the output voltage of the first control signal generator a plurality of voltages having non-linear relation with the output voltage of the first control signal generator, which are adjustable to provide for a plurality of slopes corresponding to respective subdivided portions of the fuel demand characteristic of the engine, and an amplifier-adder to amplify and add together the derived voltages so as to produce a total output voltage conforming to the engine fuel demand characteristic over the entire range of the engine-operating parameter. The pulse width of the pulse signal to energize the fuel injection valves is varied in accordance with the total output voltage from the signal processing circuit. Thus, even if the fuel demand characteristic is non-linear, it may be closely followed over the entire range of the involved engine-operat-

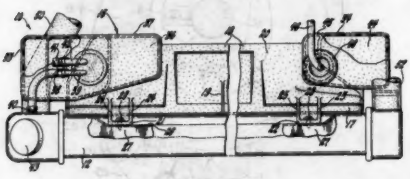
ing parameter in controlling the amount of fuel supplied to the engine.

3,692,004

FAN SHROUD AND FLUID RECEPTACLE ARRANGEMENT

Duane R. Tangue, Linden, and Gerald A. McNalley, Vassar, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,678
Int. Cl. F01p 9/04
U.S. Cl. 123—41.57 7 Claims



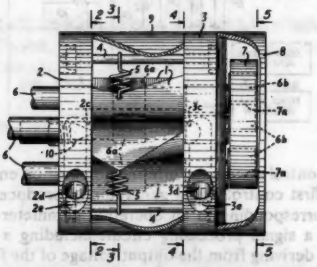
An engine cooling system wherein a fan shroud and fluid receptacle arrangement includes a rectangularly-shaped fan shroud having a cylindrical band or collar extending away from the radiator and a radiator fluid overflow receptacle and a windshield washer fluid receptacle integrally molded on opposite side surfaces of the cylindrical band or collar. The result is a compact one-piece arrangement which: (1) eliminates the need for space and fastening means for three different components; (2) eliminates the need for retooling for different component designs for specific vehicle models; (3) provides a substantial cost saving; and (4) prevents the shroud from becoming vibrated or excited by the rotating fan and caused to create noise by virtue of rigidity reinforcement provided in part by the receptacle structures and dampening provided by the fluids therein.

3,692,005

INTERNAL PRESSURE ENGINE

Norman L. Buske, 15 Indian Run Trail, Wakefield, R.I.

Filed April 19, 1971, Ser. No. 134,947
Int. Cl. F02b 25/08
U.S. Cl. 123—51 R 18 Claims



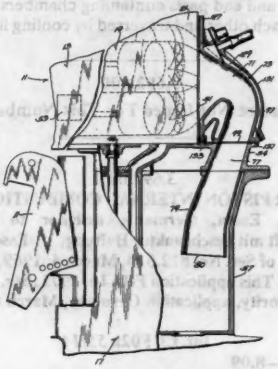
An internal combustion engine comprises at least three like members, called hedrons, between two parallel end plates. Each of the hedrons has end faces engaging the respective end plates, a concave side face and an adjacent convex side face. When the hedrons are assembled with the concave side face of each hedron slidably engaging the convex side face of an adjacent hedron, the concave side faces of the hedrons define a combustion chamber the volume of which is varied by inward and outward movement of the hedrons. Each of the hedrons is supported by an eccentric or crank on a shaft that extends between the end plates. The shafts are interconnected by a timing plate or by gears so that the rotation of the shafts and corresponding movement of the hedrons is synchronized. The end plates are provided with intake and exhaust ports. A charge is introduced into the combustion chamber, compressed by inward movement of the hedrons and thereupon ignited. The expanding combustion products force the hedrons outwardly and this outward movement is converted into rotary movement of the shafts. Power is taken off any one of the shafts or from a central shaft driven by the individual shafts supporting the respective hedrons.

3,692,006

MULTI-CYLINDER PULSE CHARGING SYSTEM

George E. Miller, Zion, and Paul A. Kalb, Waukegan, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 13, 1970, Ser. No. 54,168
Int. Cl. F01r 7/08; B63h 21/26; F01r 1/00
U.S. Cl. 123—55 VE 18 Claims



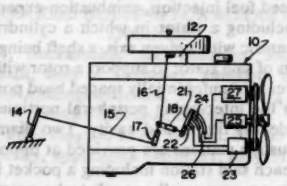
Disclosed herein is a marine propulsion device comprising an engine having at least three cylinders each with an exhaust port, means for establishing a sequential firing order for said cylinders, and exhaust gas discharge means communicating with said exhaust ports for establishing substantially equal acoustical flow distances between each of said exhaust gas ports and said exhaust port of the subsequently charged one of said cylinders. The acoustical flow distance is uniform so as to afford with respect to each firing of the engine, arrival of a compressive wave emanating from the opening of the exhaust port of one of the said cylinders at the exhaust port of the cylinder which is next charged at a time prior to closing of the last mentioned exhaust port.

3,692,007

METHOD AND APPARATUS FOR DECOUPLING ENGINE ACCESSORIES

Ole K. Nilssen, Barrington Hills, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 30, 1970, Ser. No. 102,710
Int. Cl. F02d 11/08; F02b 77/00
U.S. Cl. 123—98 2 Claims



There is provided means for sequentially decoupling accessory loads from an engine in such a manner that, particularly

when the engine is of optimum torque or power design, the decoupling action will not cause a sudden increase in engine torque output to be applied to the driving wheels of an automobile. Decoupling of the various engine accessories can be accomplished one at a time over a given limited range of throttle or torque demand settings or can be a gradual decoupling beginning at some predetermined throttle or torque demand setting and continuing to a condition of complete decoupling.

3,692,008

Patent Not Issued For This Number

3,692,009
IGNITION ARRANGEMENTS FOR INTERNAL COMBUSTION ENGINES

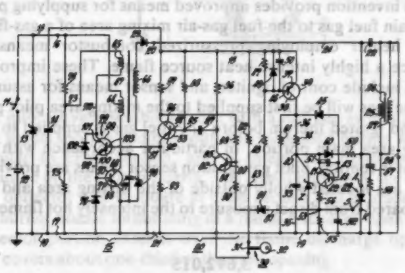
Jorg Issler; Helmut Roth, both of Stuttgart, and Gerhard Sohner, Geradstetten, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 22, 1970, Ser. No. 74,351

Claims priority, application Germany, Oct. 18, 1969, P 19 52 603.5

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **27 Claims**



The ignition capacitor is connected to a DC to AC converter to be charged, and then discharged in synchronism with the desired firing of the spark plugs. The ignition capacitor is discharged by rendering conductive a thyristor, which has a de-ionization period. During discharge and immediately thereafter, a timer, consisting of a multivibrator, and an auxiliary switch prevent the DC to AC converter from charging for a period at least equal to the discharge period of the thyristor The auxiliary switch can be a transistor that open circuits the conductive path to the control winding of the converter or a thyristor connected in series or in shunt with the secondary winding of the converter.

3,692,010
AUTOMATIC SYSTEM FOR SPRING STARTING AN INTERNAL COMBUSTION ENGINE

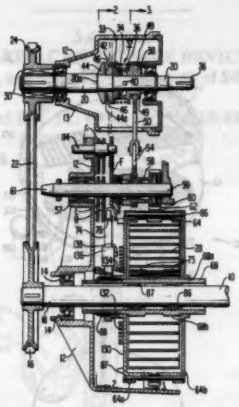
James Linville Dooley, Santa Monica, and Clarence John Harasta, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Nov. 27, 1970, Ser. No. 93,236

Int. Cl. F02n *5/02*

U.S. Cl. 123—185 C **18 Claims**

A system is provided for spring starting an internal combustion engine including a convolute spring disposed about the crankshaft axis of the engine. The spring drives the crankshaft through a one-way clutch operatively connected with one end thereof. The spring is fastened to a spring casing at the other end thereof. A spring rewind drive train drivingly connects the crankshaft with the spring casing and is operable to wind the spring when the crankshaft is being rotated by the engine after starting. The spring may also be either hand wound or wound by an electric or hydraulic motor or other motive power. A unique linkage mechanism is provided for automatically controlling the winding and releasing sequences of the starter spring in response to the manipulation of a control by a human operator. The linkage mechanism is designed to rotate, expand or contract to perform the necessary functions in response to single movements of the control rod.



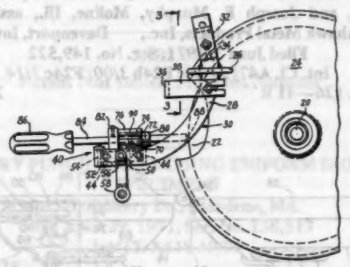
3,692,011
WHEEL REFACER

Albert L. Reese, 1031 Sagamore Way 95822, Sacramento, Calif., and Christopher K. Miller, 926 43rd St., Sacramento, Calif.

Filed Jan. 18, 1971, Ser. No. 107,248

Int. Cl. B24b *53/02*

U.S. Cl. 125—11 NT **2 Claims**



A frame securable to a wheel housing, a positioner movably mounted to said frame, and a tool mounted to the positioner for contact with the surface of the wheel.

3,692,012
COOKING DEVICE

William H. Wiggins, 50A Sondon Ave., Toronto 7, Ontario, Canada

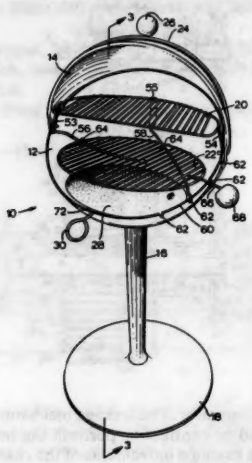
Division of Ser. No. 817,864, April 21, 1969, Pat. No. 3,617,022. This application Oct. 8, 1971, Ser. No. 187,695

Int. Cl. A47j *37/00*; F24b *3/00*

U.S. Cl. 126—25 R **3 Claims**

A cooking device comprising upper and lower hemispheres wherein the peripheral rim of the lower hemisphere is tilted at an angle to the axis of a pedestal support to which it is rigidly secured. The upper hemisphere is rotatably mounted on the lower hemisphere so as to rotate about a common axis of each, and is dimensioned so as to rotate without interference over at least a portion of the outer surface of the lower hemisphere. Stop means are provided to preclude rotation of the upper hemisphere in the other direction over the lower hemisphere

so that the upper hemisphere forms a hood for the lower hemisphere. A grill is horizontally supported in the lower hemi-



sphere by means of ramp means on the inner surface of the lower hemisphere and a rigid rod on the grill that cooperates with the said tilted portion of the peripheral rim.

3,692,013

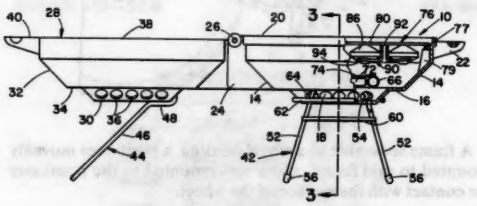
GAS-FIRED COOKING GRILL

Jim R. Grafton, Moline, Ill.; Glenn E. Wilkins, Davenport, Iowa, and Joseph F. Murphy, Moline, Ill., assignors to Blackhawk Metal Products, Inc., Davenport, Iowa

Filed June 3, 1971, Ser. No. 149,522

Int. Cl. A47j *37/00*; F24b *3/00*; F24c *3/14*

U.S. Cl. 126—41 R **21 Claims**



A portable gas-fired cooking grill includes a receptacle having an open top and a cover swingably mounted on the receptacle to form a closed housing when the cover is swung to its closed position, the cover being swingable to an open horizontal position wherein the open bottom of the cover faces upwardly alongside the open top of the receptacle. Removable stand means are provided for supporting both the receptacle and the cover in their open condition above a supporting surface. A pair of grills are respectively removably mounted over the open top of the receptacle and the opening in the cover. A gas burner is disposed in the bottom of the receptacle and is supplied with gas from a removable propane tank, which is storable in the cover. A plurality of ceramic briquettes are releasably clamped in a predetermined pattern in the receptacle above the gas burner.

3,692,014

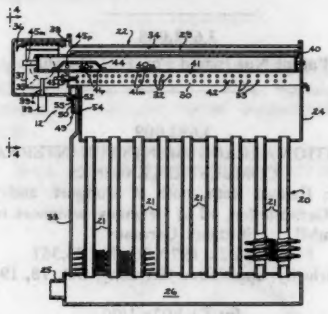
PILOT AND MAIN FUEL GAS SUPPLY MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER

James D. Boucher, and Jesse L. Hopkins, both of Tyler, Tex., assignors to General Electric Company

Filed May 26, 1971, Ser. No. 147,015

Int. Cl. F23g *9/08*; F24h *3/08*

U.S. Cl. 126—110 R **9 Claims**



This invention provides improved means for supplying pilot and main fuel gas to the fuel gas-air mixing area of a gas-fired space heater employing pressurized combustor means to produce a highly intense heat source flame. These improved means include control, igniter, and sensor means for assuring that fuel gas will be first supplied to the mixing area pilot portion and ignited therein before any fuel gas is supplied to the mixing area main portion. In particular accordance with the present invention, pilot gas ignition sensor means are provided which are located wholly outside of the mixing area and are thus spared from direct exposure to the intensely hot flame.

3,692,015

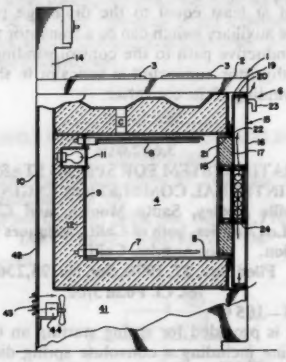
WINDOWED DOORS FOR SELF-CLEANING OVENS

William B. Chase; Joseph E. Jendrisak, both of Northville, and Harold E. McKelvey, Plymouth, all of Mich., assignors to Shatterproof Glass Corporation, Detroit, Mich.

Division of Ser. No. 848,547, Aug. 8, 1969, Pat. No. 3,612,825. This application June 1, 1971, Ser. No. 148,616

Int. Cl. F23m *7/00*

U.S. Cl. 126—200 **5 Claims**



Windowed doors for self-cleaning household ovens where the window assembly has a series of spaced parallel glass window panels secured in alignment with two of such panels near the oven cavity enclosing a dead-air insulating space, and a third of such glass window panels being separated from the oven cavity by two dead-air space enclosing glass panels, with the space between the third panel and the two dead-air enclosing panels being ventilated for replacement of heated air

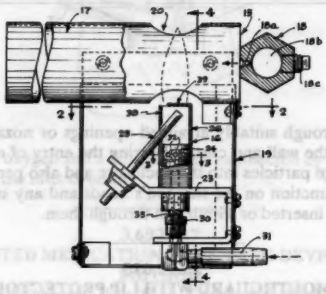
therein by natural circulation of cooler air, and a thin grid-like foraminous reflective coating on at least one of the glass panels disposed in the ventilated air space to reflect a relatively large proportion of radiant oven heat and to be cooled by the air wash during such ventilation.

3,692,016

PILOT VALVE ASSEMBLY FOR A SWITCH HEATER

Alexander P. Stikkers, Elgin; Albert E. Elzy, Algonquin, and Joseph L. Czyl, Glenview, all of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Oct. 29, 1970, Ser. No. 85,090
Int. Cl. F23c *5/00*; F23q *9/00*
U.S. Cl. 126—271.2 B 9 Claims



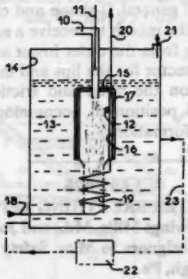
A pilot valve assembly for use with a railroad switch heater that resists sooting and blowout, and includes a burner nozzle, circular in cross section, and a shield and deflector unit mounted on the burner nozzle. The shield portion of the shield and deflector unit is square in cross section and extends from the burner nozzle terminating in a flame discharge opening. A deflector portion extends over the flame discharge opening and covers about one-third of the area opening.

3,692,017

SUBMERGED COMBUSTION HEAT-GENERATOR, IN PARTICULAR FOR THE PRODUCTION OF VERY HOT WATER

Luc Clement Dominique Glachant, Brunoy, and Remi Pierre Leon Alain Guillet, Saint Mande, both of France, assignors to Gaz de France, Paris, France

Filed Nov. 30, 1970, Ser. No. 93,767
Claims priority, application France, Nov. 28, 1969, 6941280
Int. Cl. F24h *1/10*; F28c *3/00*
U.S. Cl. 126—360 A 4 Claims



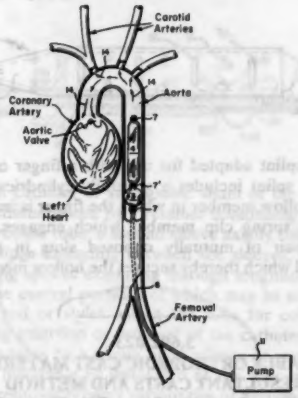
A submerged combustion heat-generator enabling the obtention of a high-temperature heat-carrying fluid. The heat generator of the invention uses a burner operating on combustion in a liquid bath, for instance of water and the combustion gases burn in a combustion chamber which is at least partially immerged in the said bath and at least partially heat-insulated therefrom. Said combustion chamber comprises a second heat-exchanger which is mounted upstream of said first exchanger on the heat-carrying fluid path.

3,692,018

CARDIAC ASSISTANCE DEVICE

Robert H. Goetz, and Lionel J. Goetz, both of 80 Vernon Drive, Scarsdale, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,452
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 8 Claims



A cardiac assistance device is disclosed which produces a uni-directional pumping action assisting the heart when the device is activated after it has been introduced into a blood vessel by conventional surgical procedures.

3,692,019

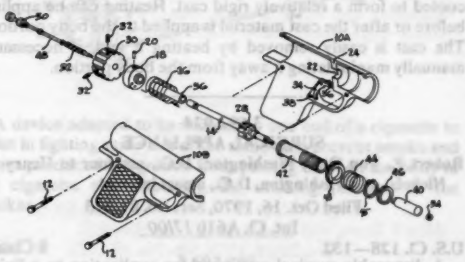
Patent Not Issued For This Number

3,692,020

ROTARY PUNCH FOR EXCISING UNIFORM DIOPSY SPECIMENS

Robert J. Schied, 7660 Berry Dr., Pasadena, Md.

Filed April 29, 1971, Ser. No. 138,517
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B 1 Claim



A spring-powered instrument in the shape of a gun equipped with a cylindrical cutting blade and having a collar means to control the depth of the cut and rod means for ejecting the specimen from the cutting blade. The instrument is activated by a trigger mechanism which holds the spring means in tension until it is released.

3,692,021
Patent Not Issued For This Number

3,692,022
DIGITAL SPLINT
Dean E. Ewing, 633 Monroe N.E. 3, Albuquerque, N. Mex.
Filed Dec. 30, 1970, Ser. No. 102,584
Int. Cl. A61f 5/04
U.S. Cl. 128—87 A **1 Claim**

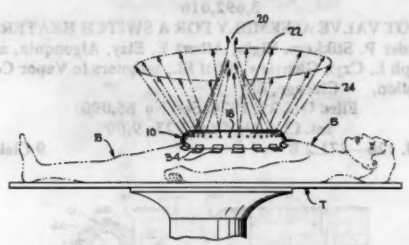
A digital splint adapted for use with a finger of a human wearer. The splint includes a generally cylindrical, substantially rigid hollow member in which the finger is inserted, and at least one spring clip member which engages the finger through a pair of mutually opposed slots in the hollow member, and which thereby secures the hollow member to the finger.

3,692,023
FORMABLE ORTHOPEDIC CAST MATERIALS, RESULTANT CASTS AND METHOD
Benjamin Phillips, Riverside, Conn.; Dale Flavian Pollart, and Joseph Victor Koleske, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Filed July 20, 1970, Ser. No. 56,727
Int. Cl. A61f 05/04
U.S. Cl. 128—90 **37 Claims**

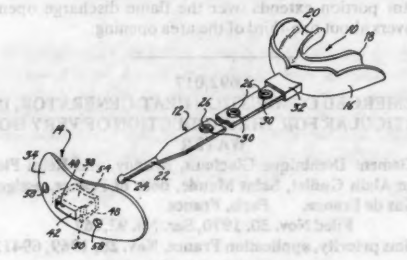
Orthopedic casts for humans and animals are prepared from orthopedic cast materials in the form of webs or sheets containing cyclic ester polymers or blends of cyclic ester polymers and poly(vinyl alkyl ether). The preferred cyclic ester is poly-epsilon-caprolactone, and the preferred poly-(vinyl alkyl ether) is poly(vinyl ethyl ether). The webs of cyclic ester polymer or blend can be heat fused or bonded to, embedded with, or impregnated into backing webs such as gauze, fabric, plastic film and the like. The cyclic ester polymer or blend can be dusted onto webs like gauze and heated to fuse it to the gauze to form a moisture-vapor permeable orthopedic cast material. The same can be obtained by impregnating the gauze with a solution of the cyclic ester polymer or blend, and driving off the solvent. Typically, the orthopedic cast material can be wrapped around a broken limb, heated, molded, and cooled to form a relatively rigid cast. Heating can be applied before or after the cast material is applied to the body portion. The cast is easily removed by heating it and, if necessary, manually manipulating it away from the body portion.

3,692,024
SURGICAL APPLIANCE
Robert E. Von Otto, Washington, D.C., assignor to Henry E. Nichols, Washington, D.C., a part interest
Filed Oct. 16, 1970, Ser. No. 81,323
Int. Cl. A61b 17/00
U.S. Cl. 128—132 **8 Claims**

A disposable surgical appliance for application to a living body to provide a protective enclosure for isolating an operating field from the surrounding atmosphere. The appliance includes an endless hollow flexible tubular member which is adhesively secured in fluid-tight relation to the body around the operating field. A constantly flowing supply of sterile air at preselected temperature and humidity is delivered into the member for discharge through a series of openings in the form of a plurality of relatively contiguous fluid jets which converge upwardly to form a continuous conical fluid curtain above the operating field. The conical curtain may be surrounded by one or more fluid walls, similarly formed by contiguous jets of fluid issuing through suitably arranged openings or nozzles in the member, the wall and curtain barring the entry of outside air and foreign particles into the enclosure and also performing a washing function on the surgeon's hands and any surgical instruments inserted or withdrawn through them.



3,692,025
MOUTHGUARD WITH LIP PROTECTOR
Samuel Greenberg, 1108 B. Cedarbrook Hill, Wyncote, Pa.
Filed Feb. 22, 1971, Ser. No. 117,610
Int. Cl. A61f 5/56; A61c 9/00
U.S. Cl. 128—136 **9 Claims**

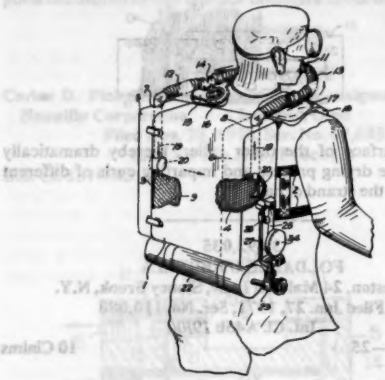


A plastic guard of general U-shape and channel cross-section for insertion in the mouth to receive a set of teeth including a strap extending from the outer lower anterior portion of the guard and a protector for the lips and the surrounding facial areas slidable on the strap and frictionally retainable thereon in adjusted position to accommodate different lip thicknesses and jaw formations.

3,692,026
UNDERWATER BREATHING APPARATUS
Frederick Tepper, Owings Mills, Md., and John W. Mausteller, Evans City, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Oct. 20, 1969, Ser. No. 867,610
Int. Cl. A62b 7/04
U.S. Cl. 128—142.2 **7 Claims**

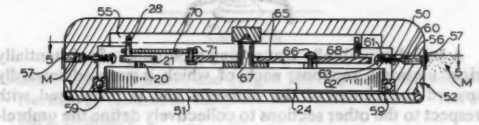
A conduit connects a mouthpiece with an exhalation bag and the inlet of a canister containing a bed of oxygen producing and carbon dioxide absorbing chemical. The bag is provided with a normally closed exhaust valve. Another conduit

connects the outlet of the canister with an inhalation bag and the mouthpiece. The outlet of a pressure tank containing a



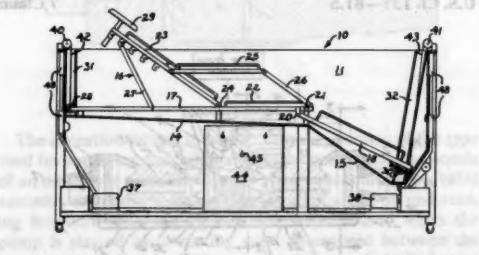
mixture of oxygen and a diluting gas is connected by a demand valve with the inlet conduit.

3,692,027
IMPLANTED MEDICATION DISPENSING DEVICE AND METHOD
Everett H. Ellinwood, Jr., 3519 Tornbridge Way, Durham, N.C.
Filed April 23, 1971, Ser. No. 136,789
Int. Cl. A61m *7/00*
U.S. Cl. 128—260 **11 Claims**



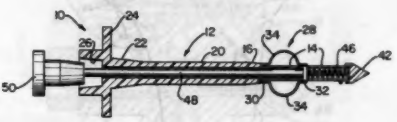
A self-micro-powered implanted device contains a store of medicine in powdered, liquid or other dispensable form and which is gradually discharged incrementally over a substantially long period of time.

3,692,028
EMERGENCY TREATMENT TANK
Ronald F. Etten, W. 302 Columbia, Spokane, Wash., and Lewis C. Duncan, 1744 Hacinda Place, El Cajon, Calif.
Filed Dec. 31, 1970, Ser. No. 103,066
Int. Cl. A61h *33/00*
U.S. Cl. 128—369 **8 Claims**



A treatment tank for emergency burn victims. The tank is in an elongated rectangular form of minimum volume so as to permit maximum responsiveness in controlling temperature changes of a patient immersed therein. The tank is designed to complement an articulated patient-supporting platform supported at its ends by elevating cable and winch assemblies. By manipulating the respective winches, the platform can be adjusted to raise or lower either end of the reclining patient, or to elevate the head or lower the feet as desired. Liquid circulating apparatus is provided for control of the liquid bath.

3,692,029
RETENTION CATHETER AND SUPRAPUBIC SHUNT
Edwin Lloyd Adair, 5985 South Crocker St., Littleton, Colo.
Filed May 3, 1971, Ser. No. 139,381
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **11 Claims**



Retention catheter or suprapubic shunt of the expandable wing type characterized by a retainer comprising a sleeve affixed to a trochar tube, a second sleeve axially slidable on the tube, the wings extending between the sleeves, the slidable sleeve having spokes extending through longitudinal slots in the tube, the central portions of which may be engaged by a removable rod or stylet within the tube for collapsing the wings during insertion or removal of the catheter, the wings being expandable by a spring upon release or removal of the stylet. The insertable or distal end of the tube may be constructed to removably carry various tips or filiforms. The outer or proximate end is constructed to be removably connected by a suitable conduit fitting to a drain tube or cannula or to a source of fluid. The trochar tube, or portions thereof, may be relatively rigid or flexible, depending upon the requirements of the body entry passage configuration.

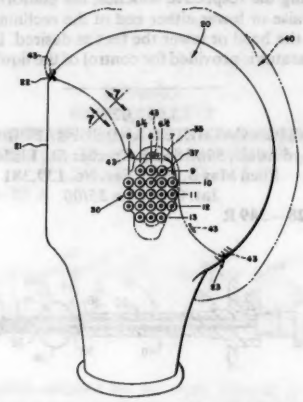
3,692,030
IGNITION TIP FOR CIGARETTES
Kyu-Bong Whang, 7-16 Sun-Wha-Dong, Sue Dai, Mun-ku, Seoul, Korea
Continuation-in-part of Ser. No. 757,948, Sept. 6, 1968, abandoned. This application May 27, 1970, Ser. No. 41,041
Int. Cl. A24d *01/08*
U.S. Cl. 131—7 **7 Claims**

A device adapted to be secured to one end of a cigarette to assist in lighting same and at the same time prevent smoke and fumes produced by ignition from passing through the body of the cigarette and impairing the smoking pleasure of the smoker.

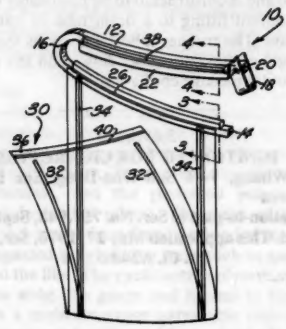
3,692,031
WIG BLOCK
Earl C. Fields, 3660 Donegal Drive, Cincinnati, Ohio
Filed Feb. 13, 1970, Ser. No. 11,113
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **6 Claims**

A wig block is provided which permits variable disposition of simulated ears thereon, to conform closely to the conditions

of a customer's head, and the wig block further is distinguished by markings enabling ready transfer of measurements determined in accordance with present novel method.



3,692,032
HAIR DRESSING APPLIANCE
Steven S. Regas, 1900 East 30th St., Cleveland, Ohio
Filed April 27, 1970, Ser. No. 32,202
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **6 Claims**

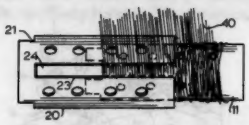


A hair dressing appliance for use in practicing hair dressing procedures such as frosting and hair straightening, comprising a hair clamp to which is attached either permanently or releasably, hair isolating means, which may be in the form of a plastic bag, or one or more plastic sheets.

3,692,033
Patent Not Issued For This Number

3,692,034
MULTIPLE NESTING HAIR CURLER
Alice B. Stone, 404 Severin St., Chapel Hill, N.C.
Filed July 6, 1971, Ser. No. 159,622
Int. Cl. A45d *2/30*
U.S. Cl. 132—40 **6 Claims**

A multiple hair curling assembly and method of drying and curling hair utilizes an inner open ended, thin walled roller adapted to have the end portion of a strand of hair wound thereon and at least one larger outer open ended, thin walled roller equipped with a narrow longitudinal slot having one end open, said outer roller being adapted to receive and secure the inner roller in a nesting relation with the hair strand passing through the slot and with a continuing portion being would

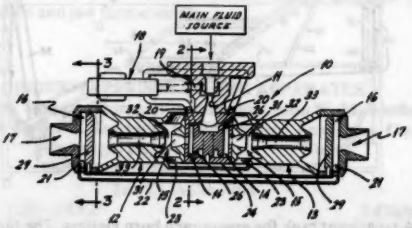


upon the surface of the outer roller, thereby dramatically hastening the drying process and imparting curls of different curvature to the strand of hair.

3,692,035
FOLDABLE UMBRELLA
Jack W. Houston, 24 Malvern Lane, Stoney Brook, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,088
Int. Cl. A45b *19/00*
U.S. Cl. 135—25 **10 Claims**

A foldable umbrella comprising a plurality of substantially rigid umbrella sections, each of which is tapered inwardly toward the center of the umbrella and is positioned with respect to the other sections to collectively define the umbrella. A plurality of flexible elongated strips are connected to the side edge portions of the umbrella sections and extend throughout substantially the entire length thereof. Preferably, the strips are slidably connected to the umbrella sections so as to be removable and replaceable. Each of the strips serves as a hinge for adjacent umbrella sections so that they are foldable with respect to each other when the umbrella is closed.

3,692,036
FLUID FLOW CONTROL APPARATUS
Warren F. Kaufman, Santa Ana, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed April 8, 1971, Ser. No. 132,314
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **7 Claims**



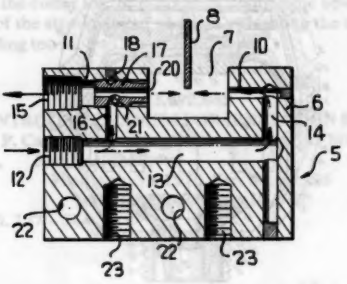
A fluidic diversion valve, having improved net thrust efficiency, comprises a shunt-staged vortex valve device in which

vortex amplifier valves in each of a pair of branches are staged in series with an ejector-diffuser element, and at least a pair of corresponding ones of the amplifier valves have their control ports connected to one another through a cross-bleed conduit.

3,692,037
JET SENSOR DEVICE

Carlos D. Pinkstaff, Kalamazoo, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 28, 1970, Ser. No. 67,893
Int. Cl. F15b 5/00; F15c 5/14
U.S. Cl. 137—83 3 Claims

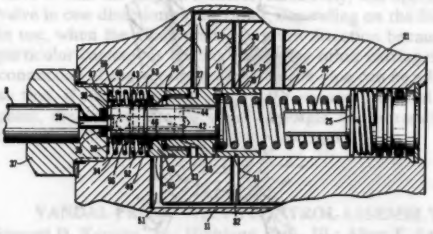


This disclosure relates to a jet sensor having a clog preventing flow out from a sensing passage in a direction opposite to the normal direction of flow. The clog preventing flow is controlled by an orifice plug seated in the sensing passage.

3,692,038
DEVICE FOR VENTING OIL PUMPS

Gunnar Lyshoj Hansen, and Jorgen Hartvig Petersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 842,243, July 16, 1969, abandoned.
This application April 8, 1971, Ser. No. 132,591
Int. Cl. G05d 7/01
U.S. Cl. 137—116 6 Claims

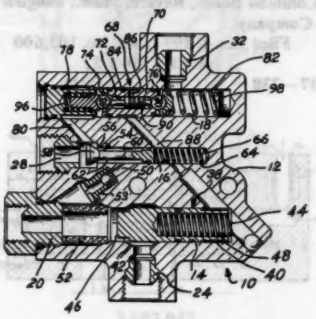


The invention relates to pump control apparatus of the type used for supplying fuel oil at a constant pressure to the nozzle of an oil burner unit. The control apparatus comprises a valve assembly for performing pressure regulating, cut-off and venting function. The venting function is performed when the pump is started by a venting valve interposed between the supply and return pipes. The venting valve is controlled so as to close before the predetermined operating pressure is reached at which time a cut-off valve opens to allow pressurized fluid to be delivered by the valve assembly.

3,692,039
CHARGING VALVE

Jerome T. Ewald; Lloyd G. Bach, and Richard L. Lewis, all of South Bend, Ind., assignors to The Bendix Corporation

Filed Dec. 21, 1970, Ser. No. 99,796
Int. Cl. G05d 16/10
U.S. Cl. 137—118 7 Claims

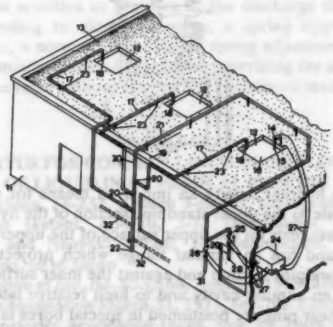


A charging valve is disclosed which controls flow of fluid into an accumulator used with a closed center hydraulic brake booster in a vehicle hydraulic system. The charging valve includes a back pressure producing device which creates a fluid pressure level within the charging valve sufficiently high to charge the accumulator while permitting sufficient fluid flow through the charging valve to operate the power steering gear of the vehicle. A shutoff valve is provided in the passage between the inlet of the charging valve and the accumulator. A second valve within the housing maintains the shutoff valve open as long as the fluid pressure level in the accumulator is below a predetermined value, but permits the shutoff valve to close when the fluid pressure level in the accumulator attains the predetermined value. The second valve also operates the back pressure producing device which restricts fluid flow between the inlet and the outlet when the fluid pressure level in the accumulator is below the predetermined value, but permits substantially unrestricted flow between the inlet and outlet of the charging valve when the fluid pressure level in the accumulator attains the predetermined value.

3,692,040
ROOF DRAINING SYSTEMS

Robert L. Kundert, Madison, Wis., assignor to Drain-Away, Inc., Madison, Wis.

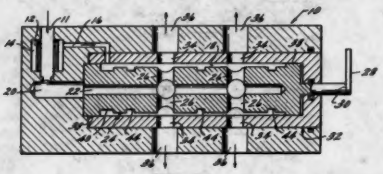
Filed Jan. 11, 1971, Ser. No. 105,322
Int. Cl. F16l 43/00
U.S. Cl. 137—142 3 Claims



A roof draining system that automatically syphons water from roofs that are not completely self-draining. The system has a plurality of sumps and extending from each of said

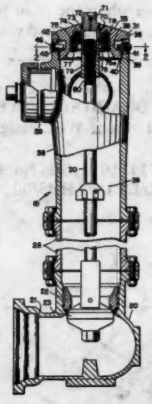
sumps are syphon pipes which connect to a common discharge pipe. The common discharge pipe is automatically primed by a control means when water has accumulated in the control sump.

3,692,041
VARIABLE FLOW DISTRIBUTOR
Pasquale Columbo Bondi, Revere, Mass., assignor to General Electric Company
Filed Jan. 4, 1971, Ser. No. 103,600
Int. Cl. F16k 5/22
U.S. Cl. 137—238 4 Claims



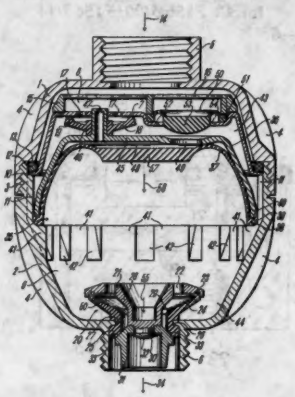
A variable flow distributor for disbursing contaminated fluids through a plurality of metering orifices, wherein the metering area of each orifice is uniformly regulated by offsetting the coaxial alignment of a pair of holes through adjacent movable partitions, such that seizure of the moving partitions from contaminants entering the area therebetween is prevented by the introduction of highly filtered fluid from conduit means which surround each orifice.

3,692,042
FIRE HYDRANT
James William Dashner, Elmira, N.Y., assignor to Kennedy Valve Mfg. Co., Inc., Elmira, N.Y.
Filed Jan. 8, 1971, Ser. No. 104,992
Int. Cl. E03b 9/06
U.S. Cl. 137—296 5 Claims



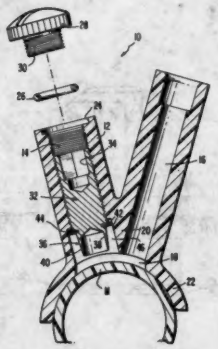
A fire hydrant having an improved means for securing a cover plate to the upper standpipe section of the hydrant. The cover plate rests on the upper surface of the upper standpipe section and has an annular flange which projects into the upper standpipe section and against the inner surface thereof to form an annular cavity and to limit relative lateral movement. Shear pins are positioned in special bores in top of the upper standpipe section and extend into the cavity where they limit movement of the cover plate axially away from the upper standpipe section. A compressed resilient washer seals and secures each shear pin in its bore.

3,692,043
SAFETY APPLIANCE
Carl A. H. M. Waskowsky, Oberglatt, Zurich, Switzerland, assignor to Patinvest Patent-und Investment A.G., Chur, Switzerland
Filed Feb. 26, 1970, Ser. No. 14,517
Claims priority, application Germany, March 11, 1969, P 19 12 168.7
Int. Cl. F16k 17/24
U.S. Cl. 137—315 25 Claims



A safety appliance for preventing an excessive flow of a fluid, e.g. upon a rupture of a pipe or hose leading to a machine or container to which the fluid is supplied under pressure.

3,692,044
TAPPING TEE
Eugene H. Wise, Newhall, Calif., assignor to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.
Filed Jan. 18, 1971, Ser. No. 107,183
Int. Cl. B23b 41/08; F16e 41/04
U.S. Cl. 137—318 10 Claims



A tapping tee comprising a body portion defining a drive socket and one or more outlet sockets in communication with the drive socket, and a saddle portion adapted to mate with and be mounted on the exterior of a main pipeline formed of a plastic material or the like. A stem member is mounted within the drive socket for rotatable and axial movement therein, such as by threaded connection. At its inner end, the stem member comprises a cylindrical cutter having a thin annular wall with a downwardly and inwardly, uniformly tapering exterior surface. When the stem member is rotated within the

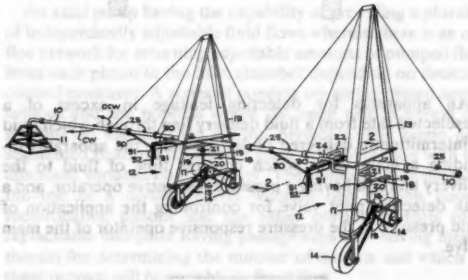
drive socket, such as by a suitable tool engaged with its outer end, the cutter is rotated and advanced inwardly into engagement with the plastic main pipeline. The cutter severs a circular coupon from the main pipeline and this coupon is retained within the cutter, owing to the slight deformation inwardly of the lower portion of the thin annular wall of the cutter as it is advanced through the pipeline. The tapered outer surface of the cutter creates a complementary annular tapered surface defining the opening in the pipeline. The cutter can thereafter be mated with this annular tapered surface of the pipeline to seal the opening cut therein, with the resultant advantage that the cutter can serve as a valve member for sealing the cut opening in the pipeline after the coupon is removed therefrom. A stop member is provided on the stem member above the cutter for the purpose of limiting the upward movement of the stem member and also preventing the cutter from extending too far into the main pipeline.

3,692,045

CONTROL MECHANISM FOR IRRIGATION SYSTEM

James P. Carr, East Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 31, 1970, Ser. No. 68,295
Int. Cl. B05b *9/02*; E01h *3/02*
U.S. Cl. 137—344 **12 Claims**



An irrigation system has a series of spaced carriages to support a water pipe for lateral movement. There is for each carriage motor valve a pivotal control member mounted on a support member and connected at one end to the water pipe. The control member has two alternative fulcrums straddling the valve so that the control member, selectively, will operate the valve in one direction or the other, depending on the fulcrum in use, when the pipe bends in a given direction because the particular carriage is leading or lagging other carriages. The connection of the control member to the pipe can be adjusted so that, if the water pipe is to move around a central pivot point, the motors for the outer carriages will normally run faster than the motors for the inner carriages.

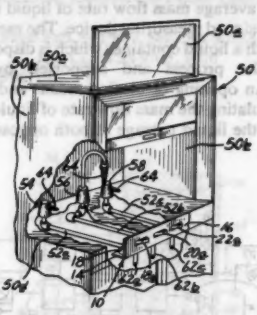
3,692,046

VANDAL PROOF VALVE CONTROL ASSEMBLY

Samuel D. Kersten, Jr., Highland Park, Ill.; Alton F. Sautter, Chicago, Ill., and John M. Simon, Downers Grove, Ill., assignors to Water Saver Faucet Co., Chicago, Ill.

Filed May 28, 1971, Ser. No. 148,011
Int. Cl. F16k *27/12*
U.S. Cl. 137—382 **7 Claims**

A vandal proof valve control assembly adapted to be mounted on a panel of a fume hood, for example. One embodiment of the assembly comprises an angled member to one leg of which a valve is secured. The other leg is provided with an opening to enable a portion of the control handle on the valve to protrude therethrough whereby the valve may be regulated while access to the valve, and the means employed to secure the control handle on the valve, is prevented. The angled member may be of sufficient length to accommodate a plurality of valves, and advantageously is located at a position



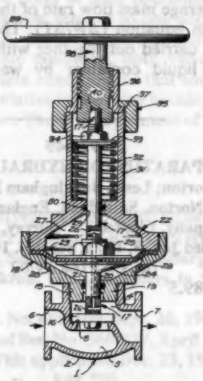
which is remote from the fixture regulated by the valve secured thereon.

3,692,047

AUTOMATICALLY REGULATED FIRE VALVE

Alfred L. Camp, Brea, Calif., assignor to Wilkins Regulators Co., Los Angeles, Calif.

Filed July 20, 1970, Ser. No. 56,558
Int. Cl. F16k *31/14*
U.S. Cl. 137—495 **5 Claims**



A valve for use in conjunction with a riser for supplying water, in case of fire, at all levels of a multiple story structure at a predetermined regulated pressure, the valve includes a diaphragm sensitive to pressure at the discharge side of the valve, tending to close the valve, a spring opposing the diaphragm, a normally inaccessible spring adjustment means, and a manually operated handle for overriding the spring and closing the valve without altering the adjustment means.

3,692,048

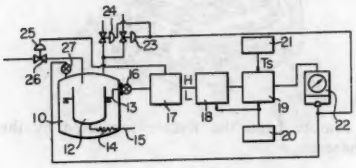
APPARATUS FOR CONTROLLING A MASS FLOW RATE OF LIQUID IN A CHEMICAL PROCESS

Mitsuo Uchida, 14-232, Kasuga 3-chome, Ibaragi-shi, Osaka; Tadanao Iketani, A3-310, 3-1, Tsukumodai, Suita-shi, Osaka, and Naoyuki Mitani, 1-4, Saknemachi, Otsu-shi, Shiga-ken, all of Japan

Continuation of Ser. No. 853,168, Aug. 26, 1969, abandoned. This application March 31, 1971, Ser. No. 129,957
Claims priority, application Japan, Aug. 29, 1968, 43/61980
Int. Cl. D06f *39/00*
U.S. Cl. 137—403 **11 Claims**

An improved apparatus for controlling a mass flow rate of liquid in a chemical process, wherein a control system for

regulating a mass flow rate of liquid in a liquid passage of the process is automatically controlled in accordance with a deviation between a reference input of mass flow rate of liquid, and an average mass flow rate of liquid measured by a particularly designed measuring device. The measuring device is provided with a liquid container which is disposed in a liquid passage of the process and supported by a weighing mechanism. An opening or closing means and an automatic means for regulating the mass flow rate of liquid are mounted separately on the liquid passage at both opposed sides of the



liquid container respectively, and the automatic regulating means is actuated as mentioned above. After opening or closing the opening or closing means, a weight difference ΔW of liquid contained in the liquid container is measured at two measuring instances which are separated by a time interval ΔT, then the average mass flow rate of the liquid is integrally calculated by an equation $(\Delta W/\Delta T)$. The measuring of the liquid weight is carried out together with measuring the net weight of the liquid container by way of the weighing mechanism.

3,692,049

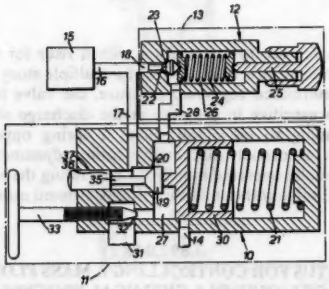
CONTROL APPARATUS FOR HYDRAULIC EQUIPMENT

Hubert Veare Norton; Leslie Buckingham Norton, and Douglas Edwin, all of Norton, Smallfield, England, assignors to Norton Tool Company, Limited, Surrey, England

Filed Jan. 5, 1971, Ser. No. 104,097

Int. Cl. F16k 29/02

U.S. Cl. 137—489.5 **4 Claims**



A control valve assembly for controlling hydraulic pressure comprising a non-adjustable unloader valve for large escape flow connected in parallel with a small adjustable trigger valve. The trigger valve opens when the pressure rises to an adjustable predetermined valve and exposes to this pressure on actuating piston of the unloader valve which is thereby opened. Means are disclosed for adjusting the closing characteristics of the unloader valve.

3,692,050

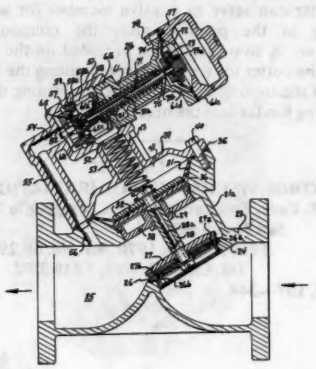
APPARATUS FOR DETECTING LEAKS IN A FLUID DELIVERY LINE

Elmer M. Deters, Muscatine, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa

Filed May 10, 1971, Ser. No. 141,507

Int. Cl. F16k 31/12

U.S. Cl. 137—491 **11 Claims**



An apparatus for detecting leakage in excess of a preselected rate from a fluid delivery line through which fluid is intermittently delivered under pressure, the apparatus including a main valve which controls flow of fluid to the delivery line and having a pressure responsive operator, and a leak detecting pilot valve for controlling the application of fluid pressure to the pressure responsive operator of the main valve.

3,692,051

FUEL SYSTEMS FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

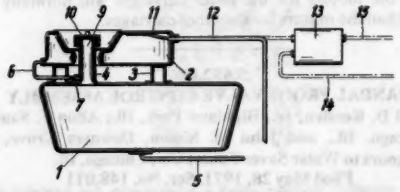
Wolfgang Eyb, Leonberg, Germany, assignor to Dr. Firma Ing h. c. F. Porsche KG, Stuttgart, Germany

Filed Dec. 29, 1970, Ser. No. 102,372

Claims priority, application Germany, Jan. 14, 1970, P 20 01 441.9

Int. Cl. F16k 45/00

U.S. Cl. 137—544 **6 Claims**



A fuel system for vehicles, especially motor vehicles, consisting of a fuel tank provided with a filling nipple adapted to be closed off in a gas-tight manner by means of a cap, an outlet or discharge line, and an expansion tank connected to the fuel tank via a branch line. A throttle is inserted in the branch line to decrease the flow cross-section of the branch line.

3,692,052

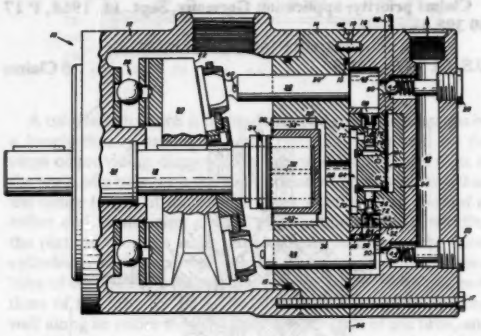
PRESSURE CONTROLLED VARIABLE PUMP OUTPUT BY-PASS SYSTEM

Hamish A. G. Cattanach, 140 Fulwell Rd., Teddington, Middlesex, England

Division of Ser. No. 738,050, June 18, 1968, abandoned. This application March 27, 1970, Ser. No. 29,720

Int. Cl. F04b 13/00

U.S. Cl. 137—561 7 Claims



An axial pump having the capability of providing a plurality of independently adjustable fluid flows wherein there is an orifice network for returning adjustable amounts of pumped fluid from each piston to the inlet chamber depending on detected control pressures. A series of poppets are spring biased across orifices and the poppets adjust the open orifice period depending on the detected control pressures. The pump uses segmented bearings for its cam plate in combination with the aforesaid variable flow capacity. The pump further includes the use of a divided barrel wherein one portion houses reciprocating pistons and the other portion consists of a replaceable end-plate having passageways and valving means therein for determining the number of outputs and which of these outputs will be variable or fixed flow.

3,692,053

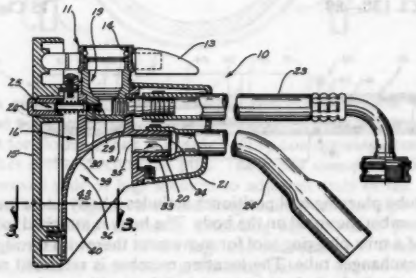
LIQUID DISCHARGE DEVICE

Henry J. Kaldenberg, Des Moines, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Nov. 27, 1970, Ser. No. 93,079

Int. Cl. F16l 39/00

U.S. Cl. 137—562 13 Claims



A coupler assembly for a portable washing machine includes a fluid deflecting surface adjacent to the outlet of the drain conduit for spreading the fluid into an energy-dissipating flow, such as a fan-like flow pattern, to reduce and substantially eliminate the objectionable splash of the high pressure fluid flow into a sink.

3,692,054

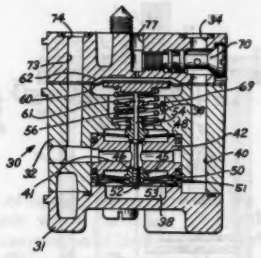
PNEUMATIC RELAY

Melvin Lawrence Buls, and Gerald Frank Varnum, both of Marshalltown, Iowa, assignors to Fisher Controls Company, Inc.

Filed Feb. 9, 1970, Ser. No. 9,853

Int. Cl. F15b 9/03, 9/08

U.S. Cl. 137—596.18 6 Claims



An adjustable gain pilot relay incorporates a body member having a pair of axially aligned valve seats therein and a valve plug coacting with each valve seat and supported by flexures which center the valve plugs relative to the valve seats and which hold the valve plugs in their operating positions. The valve plugs are adjustable relative to one another and to the valve seats in a novel manner such that both ports may be open at a steady-state condition, both valve ports may be closed at a steady-plate condition, or that some travel of the exhaust valve stem relative to the relay housing is necessary to open either valve port. Thereby adjustment of the relay gain is made.

3,692,055

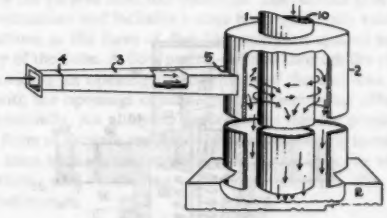
METHOD FOR UNIFORM DISTRIBUTION OF GASES IN AN ANNULUS AND APPARATUS THEREFOR

Floyd E. Benner, Jr., Scott Township, Pittsburgh, Pa., and Clifford E. Loehr, Akron, Ohio, assignors to PPG Industries, Inc.

Continuation of Ser. No. 669,109, Sept. 20, 1967, abandoned, which is a division of Ser. No. 360,937, April 20, 1964, Pat. No. 3,467,498. This application Dec. 23, 1969, Ser. No. 884,770

Int. Cl. F16l 41/00

U.S. Cl. 137—604 5 Claims

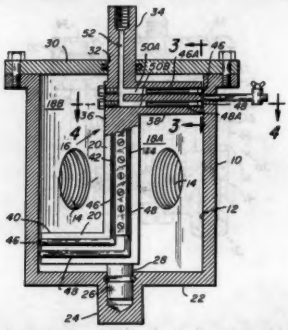


The production of pigmentary metal oxides, e.g., titanium dioxide, by vapor phase oxidation of the corresponding metal halides, e.g., titanium tetrachloride, is described. Method for providing effective mixing of reactant gases is discussed and a particular method for delivering reactant gases to the reaction zone in a uniform manner is described.

3,692,056
MULTI-PORT VALVE HAVING IMPROVED SEAL RETAINING MEANS

Creal E. Kirkwood, 3237 North Lewis, Tulsa, Okla.

Continuation-in-part of Ser. No. 63,236, Aug. 12, 1970, Pat. No. 3,658,093. This application Aug. 25, 1971, Ser. No. 174,628
Int. Cl. F16k 11/07
U.S. Cl. 137—625.43 4 Claims

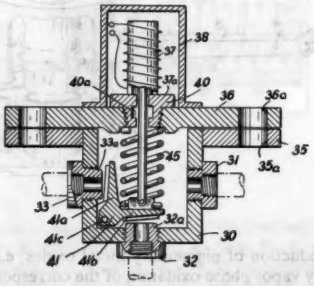


A valve having an internal cylindrical sealing surface and a plurality of spaced apart port openings, a gate member positioned in the body dividing it into two flow chambers, the gate member having opposed longitudinal sides and semicircular portions providing a continuous sealing surface, the gate member having spaced apart continuous grooves formed in the sealing surface, a continuous gasket member supported in each of the gate member grooves providing, when the gasket members are expanded by pressure applied externally of the valve, sealing engagement with the valve sealing surface, and an elongated gasket retaining plate affixed to each longitudinal side of the gate member, each gasket retaining plate being configured to form a portion of a groove in the gate member, the width of each groove being narrower at the contact surface than the diameter of the gasket member to prevent the gasket member from being dislodged.

3,692,057
SOLENOID VALVE

John W. Barnd, 32 Hollybrook Rd., Paramus, N.J.

Continuation of Ser. No. 812,583, April 2, 1969, abandoned, which is a division of Ser. No. 647,578, April 24, 1967, which is a division of Ser. No. 350,791, March 10, 1964, Pat. No. 3,351,128. This application April 12, 1971, Ser. No. 133,360
Int. Cl. F16k 11/02, 31/00
U.S. Cl. 137—625.44 10 Claims

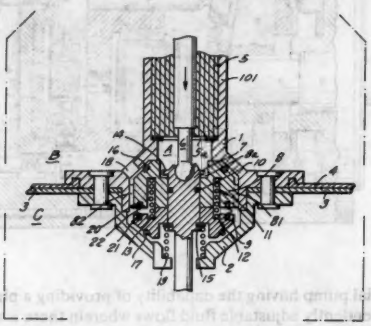


A solenoid valve having two controlled outlet ports wherein a pivotally mounted valve closure member having two angularly displaced closure sections coupled to a movable solenoid core is employed to simultaneously control the openings of the outlet ports.

3,692,058
DUAL-STAGE VALVE

Klaus Buhne, Gummersbach, Germany, assignor to Dr. Hermann E. Muller Metallwarenfabrik Bergneustadt GmbH, Bergneustadt, Bez, Cologne, Germany

Filed Sept. 9, 1969, Ser. No. 856,368
Claims priority, application Germany, Sept. 11, 1968, P 17 80 398.4
Int. Cl. F16k 11/22, 31/12
U.S. Cl. 137—627.5 8 Claims

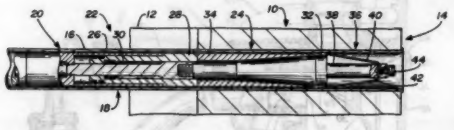


A dual-stage valve for braking-force amplifiers in vehicle braking systems and the like. A valve housing has opposite ends. An elongated valve control member is shiftable in this housing in direction towards one of the ends and has an axis which extends in this direction. A pair of valve members each fluid-tightly surround the valve control member and are slidable in direction towards and away from the respective ends. A biassing spring biasses the valve members apart along the axis of the valve control member. Limiting means on the valve control members limits axial movement of the valve members apart under the influence of the biassing spring. Shifting means serves to shift the valve control member in direction from one towards the other of the ends of the housing. A second biassing spring opposes this shifting movement.

3,692,059
TUBE PLUGGING TOOL POSITIONER

Charles O. Ice, Jr., Long Beach, Calif., assignor to Hydro-Vel Services, Inc., Monahans, Tex.

Filed June 3, 1970, Ser. No. 43,159
Int. Cl. F16l 55/10
U.S. Cl. 138—89 15 Claims

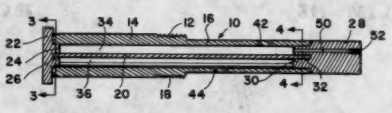


A tube plugging tool positioner includes a body and a locating member mounted on the body. The body is attached to the end of a tube plugging tool for movement therewith through a heat exchanger tube. The locating member is retracted relative to the body during movement of the positioner through a tube, and is extended as the body passes out of the remote end of the tube. The tube plugging tool is then positioned relative to the tube by withdrawing the positioner to the extent permitted by the locating member. The positioner may be either spring or gravity actuated, and is constructed for movement through a heat exchanger tube even though the tube has foreign matter in it or has holes through it.

3,692,060
LONGITUDINALLY DIVIDED TUBE AND METHOD OF MAKING THE SAME

Paul E. Dussel, Ravenna, Ohio, assignor to Falls Machine Company, Summit, Ohio

Filed March 31, 1971, Ser. No. 129,679
Int. Cl. B23k *1/20*; F16l *9/18*, *59/10*
U.S. Cl. 138—89 12 Claims



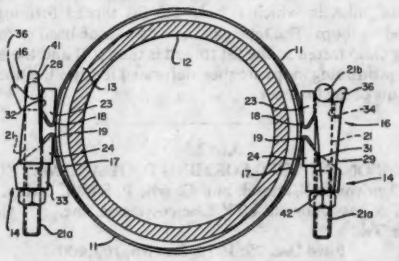
A tube length which is divided into two separate passages by a longitudinally extending wall. The tube is formed by the steps of providing diametrically opposed longitudinal slots in the walls of a tube with the slots extending somewhat less than the entire length of the tube to leave solid portions thereof at either end, positioning a metal plate within the slots, welding the plate to the tube walls, subsequently machining the outer cylindrical surface of the tube to provide a smooth surfaced tube of the desired external diameter, removing both end portions of the tube to leave a tube portion having the dividing wall along its entire length, capping both ends of the tube, and providing a plurality of holes in the tube walls on either side of the plate.

3,692,061
Patent Not Issued For This Number

3,692,062
PIPE REPAIR CLAMP

Paul G. Dunmire, Oakland, Calif., assignor to Christy Metal Products, Inc., Emeryville, Calif.

Filed Nov. 14, 1969, Ser. No. 876,789
Int. Cl. F16l *55/16*
U.S. Cl. 138—99 5 Claims

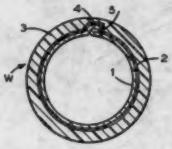


A pipe repair clamp assembly employing a flexible, metal band to be strapped and tightened about a pipe or other conduit for closing a leak in its side wall by compressing a resilient gasket seal encircling the pipe. The repair clamp includes an improved pair of lugs secured to adjacent ends of the band wherein the lugs each extend longitudinally of the pipe being sealed. Radially outwardly extending lug extension portions are formed on one of the lugs and an opening is formed in each. Radially outwardly protruding pairs of spaced retainer ears are carried by the other lug to define a radially open slot between each pair of ears. Bolts having a transverse cross-head extend both through the openings and an associated one of the slots so that the cross-head will lie radially between the ears and the conduit. Elongated fingers, spaced longitudinally of the lugs, project from one lug toward the other and serve to resist rotation of the ears noted above upon tightening of the bolts.

3,692,063
FLEXIBLE WAVEGUIDE AND METHOD OF PRODUCING

Rolf Wagele, Isernhagen N.B., Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellshaft, Hannover, Germany

Filed March 15, 1971, Ser. No. 124,024
Claims priority, application Germany, March 17, 1970, P 20 12 572.8
Int. Cl. F16l *11/00*
U.S. Cl. 138—139 9 Claims

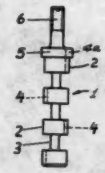


A method of forming a waveguide for the transmission of electromagnetic waves, having a construction particularly adapted for transmission of high frequency waves and which is capable of sufficient flexure to allow the same to be wound on drums. The waveguide is formed from a thin metal tape converted to tubular form having a longitudinal tab seam portion which is welded and folded over against an outer surface portion of the tubing. An adherent coating of thermoplastic polymer and an outer sheath of synthetic resin are applied over the tubing.

3,692,064
FLUID FLOW RESISTOR

Gunther Ernst Hohnerlein, Dusseldorf; Gunther Max Meinhart, Oberhausen, and Peter Hildebrand, 464 Wattenscheid, all of Germany, assignors to Babcock and Witcox Ltd., London, England

Filed Dec. 12, 1969, Ser. No. 884,443
Claims priority, application Germany, Dec. 12, 1968, P 18 14 191.8
Int. Cl. F15d *1/02*
U.S. Cl. 138—42 10 Claims



A resistor for mounting into the tube of a heat exchanger to control the flow of fluid therethrough. The resistor is of unitary construction and includes a stem having laterally extending projections in the form of disk-like members spaced longitudinally of the tube. A flow path is defined through the resistor by providing an opening through each of the disk-like members with the openings of adjacent members being offset circumferentially. An alternate embodiment has the projections in the form of arcuate partitions laterally extending to one side of the stem with adjacent partitions being on opposite sides of the stem and including openings through the stem therebetween.

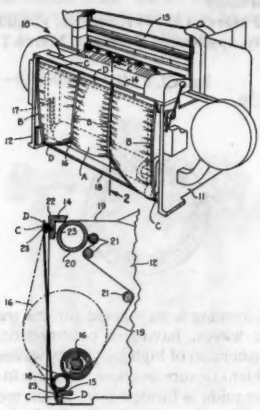
3,692,065
EXPANDIBLE LOOM APRON

Coy L. Saul, 211 Layton Ave., Danville, Va.

Filed July 27, 1971, Ser. No. 166,524
Int. Cl. D03j *1/00*
U.S. Cl. 139—1 C 2 Claims

An expandible loom apron for a cloth roll has a plurality of vertically spaced pleats formed by fastening a plurality of ver-

tical horizontally spaced elastic strips in stretched condition to an elongated thin sheet of plastic film, and means fastening the sheet of plastic film along upper and lower edges thereof in



position above and below a cloth roll so that as the cloth roll expands as it is filled with cloth during weaving the apron also expands to protect the cloth wound thereon.

3,692,066

HAIR WASHING DEVICE

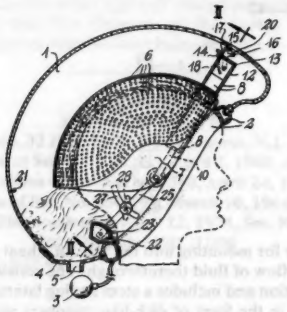
Ernesto Fava, Via Arce, 40, Salerno, Italy

Filed Jan. 19, 1972, Ser. No. 218,934

Claims priority, application Italy, Jan. 29, 1971, 19950 A/71

Int. Cl. A45d *19/00*

U.S. Cl. 132—9 **5 Claims**



Hair washing device comprising a helmet (hairdrier), internally of which a perforated grating is provided, a channel full of water and open to the grating moving in contact therewith, and being suitable to spray water over the entire hair mass of a helmet user's. The channel is reciprocated by the thrust of water jets alternately issuing from either of two holes on the two sides of the channel: these holes being alternately closed by a swinging lever which is displaced on contacting stationary stop elements.

3,692,067

Patent Not Issued For This Number

3,692,068

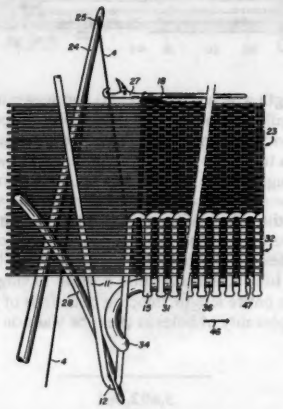
A METHOD OF AND A LOOM FOR PRODUCING A TAPE HAVING A LIST WITH LATERALLY PROTRUDING LOOPS

Ulrich W. Auer, Chene-Bougeries/GE, and Andre Nicole, Puplinge/GE, both of Switzerland, assignors to Interbrev S.A., Luxembourg, Luxembourg

Filed Sept. 23, 1970, Ser. No. 74,744

Int. Cl. D03d *47/00*

U.S. Cl. 139—116 **28 Claims**



A method and a needle loom for producing a tape having a list with protruding loops along the edge at which is inserted the weft needle. An auxiliary sheet is superposed over one of the warp sheets and moves therewith;between these sheets there is inserted, in a direction opposite to the weft, double picks of a list thread with the heads thereof being held externally of the tape during weaving of the latter. The loom comprises a free needle disposed alongside the above-mentioned tape edge: the head of this free needle engages the double pick list heads and its shank allows them to slip off as the tape moves forward. The list is a double thickness fabric with intermediate links, in which is held the list thread forming the protruding loops. The tape can in particular be used to form a sliding clasp fastener: the list thread is then stiff and the heads of the protruding loops are then deformed to form the hooking elements of the fastener.

3,692,069

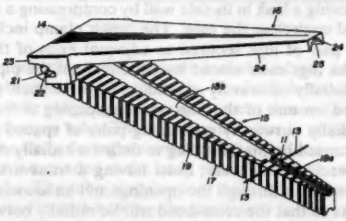
COMPONENT LEAD FORMING TOOL AND METHOD

Leo Clendennen, Garland, and Charlie P. Smith, Irving, both of Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed Dec. 29, 1970, Ser. No. 102,400

Int. Cl. B21f *1/00, 45/00*

U.S. Cl. 140—106 **5 Claims**



A tool and method for forming stress relieving loops in the axial leads of an electrical component. A wedge-shaped com-

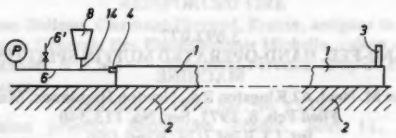
ponent holding block includes generally flat upper and lower surfaces having a plurality of transverse lead receiving grooves formed across the upper and lower surfaces and down the sides. The wedged shape of the block results in side wall grooves which vary in spacing to allow lead formation for different spacing of component mounting holes. A component is placed in a central slot in the block and the leads are first bent downwardly into properly spaced grooves. Then a fulcrum member, pivotally attached to the holder, is placed over the bent leads of the component, and the leads are then bent upwardly about overhanging edges of the fulcrum member to form a stress relieving loop in each of the leads.

3,692,070

METHOD OF AND APPARATUS FOR FILLING A TUBE OR A HOSE WITH A SOLID MATERIAL, PREFERABLY SAND

John Larsen, Odense, Denmark, assignor to Fyens Saekkekom-Pagni A/S, Odense, Denmark

Filed Dec. 1, 1970, Ser. No. 94,099
Claims priority, application Denmark, Dec. 3, 1969, 6406
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—1 **7 Claims**



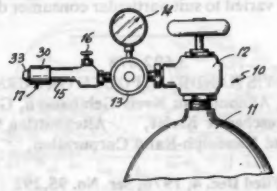
A method of and an apparatus for filling a tube or a hose with a solid material, such as sand, preferably for preparing a solid sausage-like member for coast protection or the like in which a liquid, preferably water, by a water pump or other pressure source is transported in a continuous flow through the tube or hose being fed from one end of the tube or hose and escaping partly or fully from the other end. The solid material, preferably sand, is fed to the feed line between the pump or other pressure source and the tube or hose to be filled or to the inlet end of this. The flow rate of the liquid is varied in such a manner that as the area of flow owing to sedimentation of the solid material in the tube or hose is reduced the rate of flow is still kept substantially within the range in which sedimentation of the solid material will take place.

3,692,071

NOZZLE FOR INFLATING BALLOONS

Manny Begleiter, Bronx, N.Y., assignor to Miner Industries Inc., New York, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,662
Int. Cl. F17c 13/00
U.S. Cl. 141—313 **3 Claims**



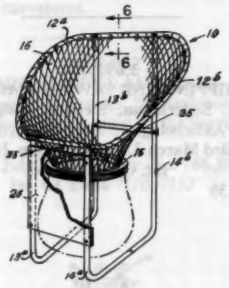
An elastic balloon mounted on a hollow valve body which projects from the mouth of the balloon neck and is open axially only at its open end, with radial passages in the valve body being normally sealed by elastic engagement of the balloon neck therearound, is inflated with gas under pressure supplied to the interior of the valve body through a nozzle structure engaged by the valve body and functioning to prevent the escape of such gas from the valve body except into the balloon. The nozzle structure comprises a core member dimensioned to extend into the valve body and having bores for the passage of the inflating gas therethrough and a frusto-conical surface for sealing engagement by the valve body at its open end, and an annular member extending around, and spaced from the core member and having an inner surface for engagement with the thickened rim at the mouth of the balloon neck.

3,692,072

LITTER COLLECTOR AND RECEPTACLE

James L. Kohls, 420 Arawe Circle E., Irving, Tex.

Filed May 11, 1971, Ser. No. 142,209
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—391 **13 Claims**



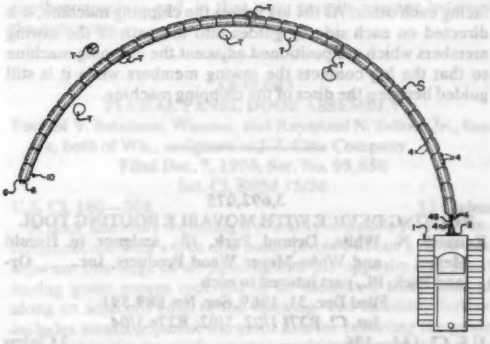
A collector for litter includes a tubular frame presenting a large, generally oval ring supported at an inclined plane on supporting legs. The ring defines a large target area and has suspended therefrom a net defining a collector funnel with a discharge opening at the bottom of the funnel defined by a discharge ring. The net funnel may discharge into a barrel or other container placed beneath the discharge ring; or the discharge ring may include means for attaching a receptacle, in the form of a plastic bag for example, which may be readily removed for transporting the litter from the site. The net is readily assembled to the frame ring and to the discharge ring by means of suitable fasteners which are readily assembled but difficult to remove. For convenience a subassembly of a plastic bag and bag ring may be preassembled and readily dropped into and supported by the receptacle discharge ring.

3,692,073

DRAG SAW

Carl W. Easterwood, Rt. 2, Sulphur Springs, Tex.

Filed Sept. 15, 1970, Ser. No. 72,433
Int. Cl. B27b 35/02, 35/14
U.S. Cl. 143—133 D **11 Claims**



An elongated drag saw for sawing trees, which has saw elements in abutting relation and which saw elements are pulled

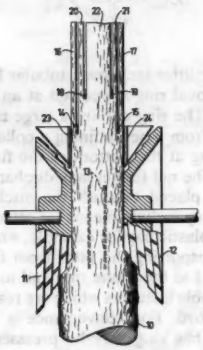
behind a traction element in a path other than straight, so that the toothed elements on the saw will engage trees and undergrowth to cut the trees and undergrowth at the surface of the ground or slightly therebelow. The cutting element has teeth on opposed longitudinal sides thereof, which toothed elements are mounted on a plurality of cables in such manner that the drag saw may be pulled by the cables from either end thereof. Provision is made for removing the toothed bars on which the saw teeth are formed and for removing the saw elements from the cables and for replacing the saw elements thereonto. The saw elements are so constructed as to have great mass so that contact with the trees or the like will not impart lateral movement thereto, but will enable the saw to readily cut vegetation.

3,692,074

CHIPPING AND SAWING MACHINE

Philip Nilsson, Soderhamn, Sweden, assignor to Kockum-Soderhamm Aktiebolag, Soderhamn, Sweden

Filed March 3, 1970, Ser. No. 16,007
Int. Cl. B27c *9/00*
U.S. Cl. 144—39 **2 Claims**



In a chipping and sawing machine a log is first passed through a chipping machine in which two opposite sides of the log are provided with planar parallel surfaces. As the log passes from the chipping machine at least one board is cut from each of the opposite sides by sawing members. The chipping machine consists of a pair of spaced chipping discs in the form of truncated cones with the small ends of the cones facing each other. As the log passes the chipping machine, it is directed on each side by guides into the path of the sawing members which are positioned adjacent the chipping machine so that the log contacts the sawing members while it is still guided between the discs of the chipping machine.

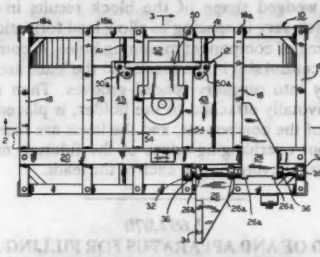
3,692,075

ROUTING DEVICE WITH MOVABLE ROUTING TOOL

Kenneth N. White, Orland Park, Ill., assignor to Harold Meyer, and White-Meyer Wood Products, Inc., Orland Park, Ill., part interest to each

Filed Dec. 31, 1969, Ser. No. 889,591
Int. Cl. B27f *1/02, 5/02*; B27c *5/04*
U.S. Cl. 144—136 **2 Claims**

Routing devices that can conveniently, quickly and efficiently cause door panels, or the like, to be slotted on a mass production basis for purposes of associating hinges therewith



that require slots formed in the panels. The routing tools are movable and the panels are held stationary.

3,692,076

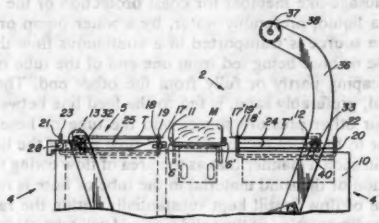
Patent Not Issued For This Number

3,692,077

HAND-FED, HAND-OPERATED MUFFIN SPLITTING MACHINE

Eugene M. Noel, 42 Kingston Rd., Newton Highlands, Mass.

Filed Feb. 8, 1971, Ser. No. 113,340
Int. Cl. B26f *1/24*; B26d *1/06*
U.S. Cl. 146—72 **4 Claims**



A muffin-splitting machine actuated by a link and curved lever mechanism having a handlebar for simultaneous tining of muffins from opposite sides with subsequent split of the muffin by lift of the upper half off the lower half, operated by easy down-sweep pulling motion of one hand of the operator, hand-fed by unobstructed cross-sweep of the operator's other hand, and having an adjustable cam lift so that the split of the muffins can be varied to suit particular consumer desires.

3,692,078

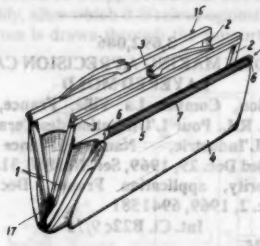
LADY'S HANDBAG, POUCH OR PURSE

Georg Reitzel, Altenmittlau Kreis Gelnhausen, Germany, assignor to Drescher & Kiefer, Altenmittlau Gelnhausen, Germany and Randolph-Rand Corporation, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,292
Claims priority, application Austria, Dec. 12, 1969, A 11576/69
Int. Cl. A45c *13/04*
U.S. Cl. 150—29 **5 Claims**

An accessory for personal use such as a French purse, a lady's handbag, wallet, etc., has a rigid frame formed of two U-shaped halves hinged together. The base of each half is channeled with the open side of the channels facing inwardly. Springy strips with cover material secured thereto are forcibly

inserted into the channel of each base in which the strips and thus the cover material are retained by engagement of the



strip ends with shoulders on the branches or legs of the frame halves.

3,692,079

Patent Not Issued For This Number

3,692,080

REINFORCED TIRE

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Elablissements Michelin, raison sociale Michelin & Cie., Clermont-Ferrand (Puy-de-Dome), France

Filed June 3, 1970, Ser. No. 43,121

Claims priority, application France, June 11, 1969, 6919439

Int. Cl. B60c *9/04, 9/20*

U.S. Cl. 152—359 **7 Claims**

A tire reinforcement in the tread, carcass, or both is made of fiber glass, carbon whiskers, or a similar material closely associated with monofilaments. Each monofilament has a diameter greater than 0.5 mm and is made of an incompressible and extensible material that can be spun.

3,692,081

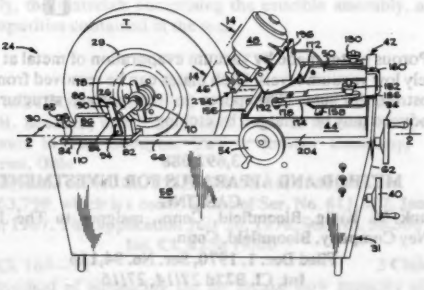
TRUING APPARATUS

George May, Lansing, and Melvin H. Lill, Okemos, both of Mich., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 22, 1970, Ser. No. 82,923

Int. Cl. B29h *21/01*

U.S. Cl. 157—13 **26 Claims**



A tire truing apparatus having a driven tire mounted for longitudinal movement toward and away from a motor driven cutter mounted for movement transversely of the tire along a preselected tread contour forming path. A transversely movable carriage has a cutter motor supporting plate that is pivotally connected to its forward end and is pivoted relative to the carriage by a cam and connecting linkages. A pair of radius rods have first ends pivoted to a frame and have their other ends pivotally connected at preselected positions in arcuate slots formed in the carriage having radii equal to that of the radius rods and transcribed about the axes of said first ends when the carriage is centered transversely. The arcuate extent of the slots is sufficient to allow the radius rods to be adjusted from a divergent position through parallel position and into a plurality of preselected convergent positions for guiding the cutter along preselected paths which will cut transverse contours on the tires, which contours vary from small to progressively larger radii convex curvatures, to a flat cut, and finally to concave curvatures.

3,692,082

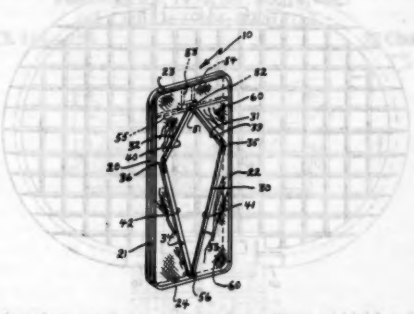
JOINTED DOOR ASSEMBLY

Douglas E. Cromwell, St. Charles, Ill., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 28, 1971, Ser. No. 166,888

Int. Cl. E06b *7/28, 7/32*

U.S. Cl. 160—87 **7 Claims**



A door assembly which includes a metal door frame in the shape of a rectangle, and a door which includes an articulated four-piece metal frame, pinned and movable between the door frame. Between the articulated frame and the door frame, and secured to both is flexible material, such as butyl rubber coated nylon, which forms the main portion of the door. The articulated frame, when in an open position, forms a quadrilateral opening which defines a doorway and permits personnel to pass through. Suitably positioned springs make the open articulated frame self-closing and, thereby, close the doorway. The articulated frame may be mated with the articulated frame of another similar door assembly which is attached to another structure and, in that way, permits passage between the structures.

3,692,083

PLURAL PANEL DOOR ASSEMBLY

Forrest V. Swanson, Wausau, and Raymond N. Sellon, Jr., Sussex, both of Wis., assignors to J. I. Case Company

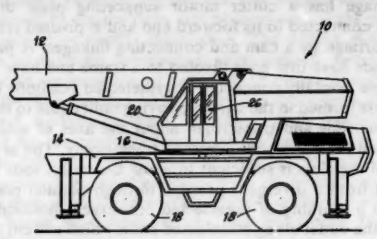
Filed Dec. 7, 1970, Ser. No. 95,850

Int. Cl. E05d *15/26*

U.S. Cl. 160—206 **13 Claims**

A door assembly including a plurality of panels pivotally interconnecred with a free end panel pivoted about a fixed axis adjacent one edge of an opening and the opposite end panel having guide means received in an elongated track located along an adjacent edge of the opening. The assembly further includes means adjacent the pivot axis for receiving the guide means when the door is in an open position wherein the panels are in overlapping relation and accommodating pivotal move-

ment of the panels about said axis from the open position to a further position where the panels are in overlapping relation

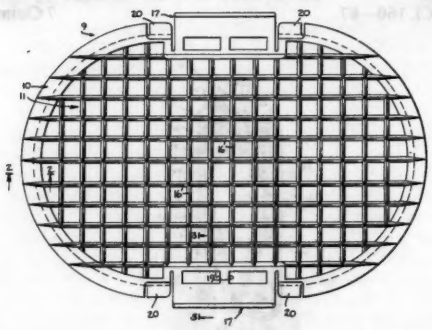


and extend substantially parallel to the elongated track and are positioned beyond the opening.

3,692,084
HOLE SHIELD

Chester A. Irvine, Chatham, N.J., assignor to Chatham Container Display Corp., Chatham, N.J.

Filed June 29, 1970, Ser. No. 50,375
Int. Cl. E05c *21/02*; E04c *19/08*
U.S. Cl. 160—368 **13 Claims**



The shield is constructed so as to snap into a painter's hole or like aperture in a structural member such as a bridge girder. The shield is constructed of plastic and has a pair of flexible retaining means at opposite sides which allow the shield to snap into the aperture of the member. The main section of the shield can be made of a mesh construction so as to permit the passage of air therethrough and avoid flutter or can be of solid construction.

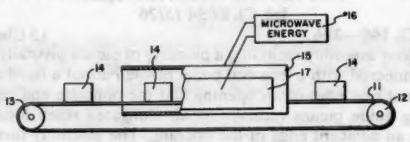
ERRATUM

For Class 162—164 see:
Patent No. 3,692,092

3,692,085
PROCESS FOR PRODUCING CORES BY MICROWAVE HEATING

Lloyd H. Brown, 75 Victor Parkway, and Larry C. Stephans, 1044 Abbington Dr., both of Crystal Lake, Ill.

Filed May 8, 1970, Ser. No. 35,902
Int. Cl. B22c *9/12*
U.S. Cl. 164—15 **1 Claim**

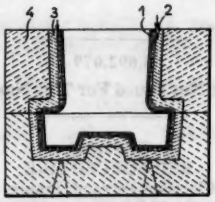


A process for producing cores in which a core box is formed from a thermosetting resin. A lossy core forming material is inserted into the core box and microwave energy is applied to the core box in a manner which substantially eliminates standing microwaves in the core box.

3,692,086
METHOD OF MAKING A PRECISION CASTING LAYERED MOLD

Robert Michelon, Combes La Ville, France, assignor to U.C.P.I. S.A. R.L. Pour L'Utilisation des Ceramiques et des Platres dans L'Industrie, Nanterre, France

Filed Dec. 29, 1969, Ser. No. 888,315
Claims priority, application France, Dec. 27, 1968, 68181109; Dec. 2, 1969, 6941581
Int. Cl. B22c *9/12*
U.S. Cl. 164—25 **1 Claim**

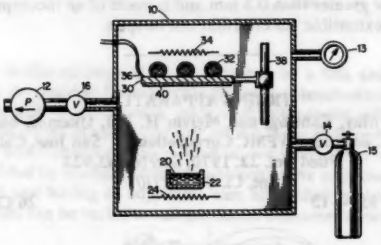


The disclosure relates to casting bodies usable in precision casting. These casting bodies are composed of a mixture of refractory materials of different granulometries, 2 to 600 microns for the fine grains and 250 to 6,000 microns for the coarse grains, the percentage of fine grains and coarse grains being comprised respectively between 20 and 77 percent and between 23 and 80 percent, and this mixture being bound with the aid of a binder obtained by gelation of a silicate.

3,692,087
METALLIC POROUS PLATES

Robert E. Eberts, Framingham, Mass., assignor to Norton Company, Worchester, Mass.

Filed March 17, 1969, Ser. No. 807,814
Int. Cl. B22d *23/00*; C23c *13/00, 13/02*
U.S. Cl. 164—46 **3 Claims**



Porous plates made by vacuum evaporation of metal at relatively low vacuum levels. Such plates can be removed from the substrate for use. The pores in the porous structure so produced may be enlarged by etching.

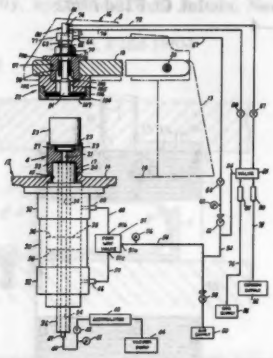
3,692,088
METHOD AND APPARATUS FOR INVESTMENT CASTING

Frank M. Kulig, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

Filed Dec. 1, 1970, Ser. No. 94,116
Int. Cl. B22d *27/14, 27/16*
U.S. Cl. 164—62 **16 Claims**

A casting machine adapted for the manufacture of precision investment castings of the type used in dental applications has

a burner arm assembly including a torch and means adapted to sealingly engage and pressurize a mold assembly. The mold assembly is positioned on a support member and is heated by the burner assembly, after which it is raised against the burner assembly. Vacuum is drawn through the support member, and



molten metal is caused to flow from the crucible portion into the mold portion of the mold assembly, and by also supplying gas under positive pressure to the crucible portion to facilitate such flow. Control means extinguish the burner assembly and operate the vacuum as well as the produce movement of the support member.

3,692,089

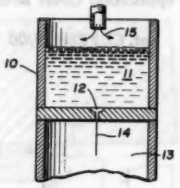
PROCESS FOR CONTROLLING ORIFICE SIZE WHEN EXTRUDING MOLTEN MATERIALS

Wilbur Privott, Jr., 1208 Wicklow Dr., Raleigh, N.C., and Michael R. Sargent, 3810 Lancaster Dr., Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1970, Ser. No. 94,720

Int. Cl. B22d *11/12, 23/00*

U.S. Cl. 164—66 **4 Claims**



The size of the orifice in a process for extruding low viscosity melts is controlled by maintaining at a predetermined level the partial pressure of a gas which enters into chemical reaction with the molten material contained within the crucible assembly, the materials comprising the crucible assembly, and the impurities contained in the melt.

3,692,090

METHOD OF MAKING A VENTED TIRE MOLD

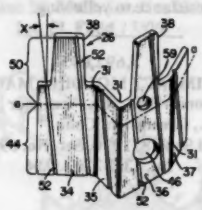
Von H. Brobeck, and Mike Zulick, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 871,585, Nov. 10, 1969, Pat. No. 3,553,790, which is a continuation of Ser. No. 611,327, Jan. 24, 1967. This application July 20, 1970, Ser. No. 56,566

Int. Cl. B23k *19/00*

U.S. Cl. 164—71 **3 Claims**

A method of enhancing the air escape flow capacity of a vented tire mold wherein the tire receiving cavity is fabricated by casting molten material around a design-forming preform providing with at least one air escape passage. The venting capacity of the mold is increased by causing the perform to become slightly loosened from the mold body. The flow capacity may be further enhanced by etching the surfaces of the provided air escape passage in order to enlarge same.



The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application reference must be made to the accompanying drawing and the following detailed description.

3,692,091

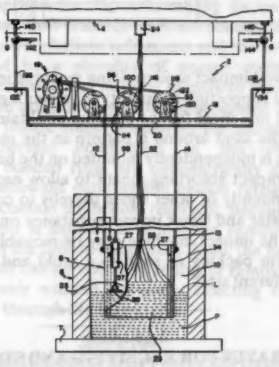
SPLASH ARRESTER APPARATUS

Robert A. Saxer, 12934 Linden Lane, Parma, Ohio

Filed March 5, 1970, Ser. No. 16,766

Int. Cl. B22c *19/04*; B22d *7/12*

U.S. Cl. 164—156 **32 Claims**



A splash arrester apparatus adapted for use in pouring molten metal into a mold including an open ended arrester device of refractory material adapted for positioning within the mold in spaced relation from the walls thereof, and adapted to encompass the stream of molten metal being poured into the mold. An actuating assembly is provided to progressively raise the arrester device in the mold while maintaining the outlet end submerged in the molten metal filling the mold. The arrester device may be used alone or equipped with a baffle-like impact member to receive the flow of molten metal entering the mold and change the shape of the stream to reduce the force of the molten metal striking the pool of molten metal contained in the arrester device and/or in the mold cavity.

3,692,092

PAPER CONTAINING A POLYETHYLENIMINE-FATTY ACID EPICHLOROHYDRIN PRODUCT

Juan Longoria, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 736,556, June 13, 1968, Pat. No. 3,622,528. This application April 1, 1971, Ser. No. 130,464

Int. Cl. D21h *3/58*

U.S. Cl. 162—164 **8 Claims**

An improved polyethylenimine adduct for cellulosic products is prepared by condensing polyethylenimine with

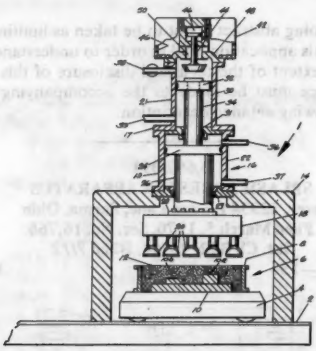
0.05–0.4 mole of a C_{12}–C_{22} fatty acid and thereafter capping the residual free amino groups by reaction in aqueous solution at 0°–50°C. with epichlorohydrin. The resulting product is an effective softener, sizing agent, and wet strength additive for paper and other cellulosic products with superior color stability and increased resistance to yellowing.

3,692,093

HIGH IMPACT MOLDING MACHINE

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 69,999
Int. Cl. B22c *15/34*
U.S. Cl. 164—212 4 Claims



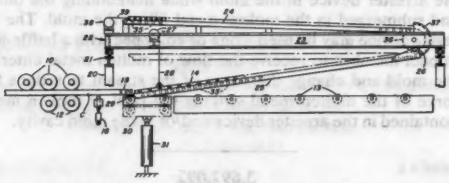
An improved impact sand molding machine includes an impacting head supporting a plurality of impacting shoes for impacting sand in a mold for the purpose of obtaining improved packing of the sand around a pattern in the mold. Each impacting shoe is independently mounted on the head and is provided with impact absorbing means to allow each shoe to impact independently of other shoes thereby to compensate for areas of greater and lesser impact resistance on the surface of the mold. The impact machine may be movably mounted for more uniform packing of sand in a mold and for impacting molds of different sizes.

3,692,094

APPARATUS FOR RECEIVING AND STORING A FLEXIBLE STARTER BAR

George J. Wagner, North Fayette Tps., Allegheny County, Pa., assignor to United States Steel Corporation

Filed Dec. 30, 1970, Ser. No. 102,587
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 6 Claims



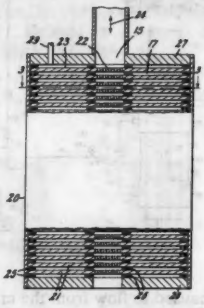
An apparatus for receiving a flexible starter bar used in continuous-casting of metals and storing the bar between casting operations. The apparatus includes upper and lower ramps, the latter being pivotally supported, whereby it can be lowered to divert the starter bar. As the bar moves up the lower ramp, the tail is directed from the lower ramp back onto the upper ramp. Thus the bar is doubled on itself for compactness. The parts can be shifted transversely of the casting line to make them accessible for maintenance.

3,692,095

ULTRA-LOW TEMPERATURE THERMAL REGENERATOR

Robert B. Fleming, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 5, 1969, Ser. No. 882,487
Int. Cl. F28d *17/02*
U.S. Cl. 165—4 9 Claims



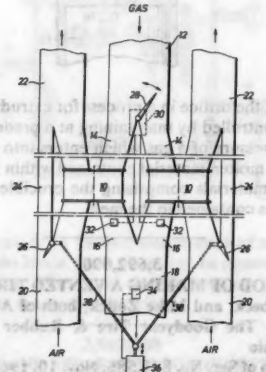
In a regenerator in which a fluid serves as the heat storage medium, axial motion of the fluid in the reservoir deteriorates the performance of the regenerator. Barriers are provided in the reservoir to significantly impede the flow of reservoir fluid in the longitudinal direction.

3,692,096

BOILER PLANT INCLUDING TWO ROTARY REGENERATIVE AIR PREHEATERS

Birger Pettersson, Alta, and Bo Johnsson, Kungsbacka, both of Sweden, assignors to Swenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed April 12, 1971, Ser. No. 133,318
Claims priority, application Great Britain, April 14, 1970, 17,666/70
Int. Cl. F28d *19/00*
U.S. Cl. 165—7 5 Claims

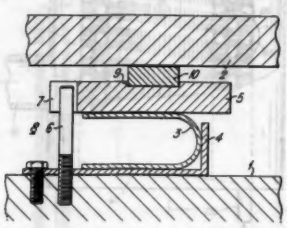


In a boiler plant including two rotary regenerative air preheaters connected in parallel in conduits branched off from main air and gas ducts are provided flow distributing damper means controllable such as to keep the discharge temperatures of the gas flows from the preheater at the same value.

3,692,097
THERMAL REGENERATORS

Robert Noel Penny, Solihull, England, assignor to Leyland Gas Turbines Limited, Lode Lane, Solihull, Warwick County, England

Filed Sept. 28, 1970, Ser. No. 75,887
Claims priority, application Great Britain, Nov. 13, 1969, 55,513/69
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 4 Claims

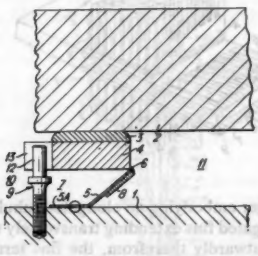


A thermal regenerator of the kind having a rotary disc-type matrix, traversed by segregated flows of heat-exchanging fluids, is equipped with a sealing assembly in which a support of non-metallic refractory material locates and supports a sealing element that makes rubbing contact with the corresponding face of the matrix; the sealing assembly also including a flexible sealing member of thin sheet metal which is designed to be pressed firmly against the support by the pressure-differential of the heat-exchanging fluids.

3,692,098
THERMAL REGENERATORS

Mark Cary Sedgwick Barnard, Kenilworth, England, assignor to Leyland Gas Turbines Ltd., Solihull, Warwick, England

Filed Feb. 2, 1971, Ser. No. 111,948
Int. Cl. F28d *19/03*
U.S. Cl. 165—9 3 Claims

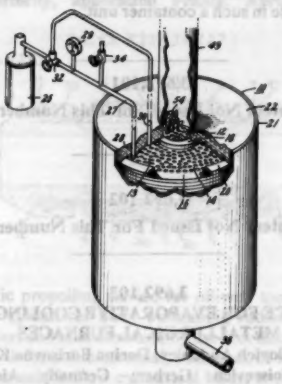


A thermal regenerator having a rotary disc-type matrix enclosed in a casing which is traversed by two segregated flows of gaseous heat-exchanging fluids; and which is equipped with a sealing assembly which comprises: an endless counterface sealing pad that makes rubbing contact with the corresponding face of the matrix; a support ring carrying the sealing pad; a flexible sealing curtain of very thin metal secured to the support ring so as to be hingeable about a corner thereof, and extending obliquely across a gap existing between the support ring and the casing; a resilient backing member of sheet metal thicker than the curtain and secured to the support ring, which backing member supports the curtain and acts as a weak spring to maintain the pad in contact with the matrix; and seal-locating means permitting freedom of movement of the pad in a plane normal to the face of the matrix, and effective also to resist the torque applied frictionally to the pad by the rotation of the matrix.

3,692,099
ULTRA LOW TEMPERATURE THERMAL REGENERATOR

Loyd B. Nesbitt, and Robert B. Fleming, both of Scotia, N.Y., assignors to General Electric Company

Filed June 20, 1968, Ser. No. 738,535
Int. Cl. F28d *17/00*
U.S. Cl. 165—10 11 Claims

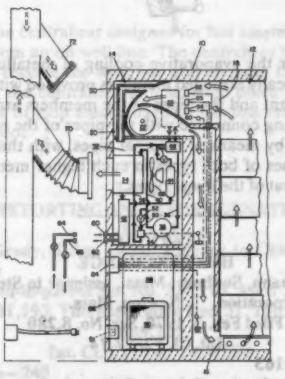


Temperatures below 10° K can be achieved operating on a Gifford-McMahon cycle by the utilization of a thermal regenerator having a pressure-regulated helium reservoir positioned within an annulus circumferentially disposed about a helium refrigerant flow channel. Thermal conduction between the cyclically flowing helium refrigerant and the helium reservoir is effected by a plurality of porous metallic plates disposed at a perpendicular attitude relative to the refrigerant flow stream with adjacent plates being separated by thermal insulators, e.g. plastic rings, bonded to the plates to inhibit longitudinal thermal conduction in the regenerator. Preferably the bonded rings are concentrically disposed to form external sidewalls defining the helium refrigerant flow channel and to contain the helium reservoir. Because the helium heat reservoir is situated at a location remote from the channel wherein the helium refrigerant flows, the heat capacity of the reservoir can be varied by adding or removing helium from the reservoir without adversely effecting the helium refrigerant flow through the regenerator.

3,692,100
MOBILE REFRIGERATOR SHIPPING CONTAINER UNIT

George F. X. Gallagher, Jr., Medfield, Mass., assignor to United Brands Company, Boston, Mass.

Filed July 9, 1971, Ser. No. 161,153
Int. Cl. F25b *29/00*
U.S. Cl. 165—29 8 Claims



A mobile refrigerator shipping container unit adapted for both land and sea shipment has both air-cooled and water-

cooled condensers in the refrigeration system with connections which can be quick coupled to ship air exhaust and water circulating systems so that when the container is aboard ship it can utilize the ships systems including power and be relieved from operating on its own self-contained power generator which is operated only when external power is not available as during land transportation aboard a truck trailer or railroad car. The unit has other novel features and controls peculiarly adapted for use in such a container unit.

3,692,101

Patent Not Issued For This Number

3,692,102

Patent Not Issued For This Number

3,692,103

DEVICE FOR EVAPORATIVE COOLING OF METALLURGICAL FURNACES

Sergei Mikhailovich Andoniev; Dorina Borisovna Kutsykovich; Leonid Moiseevich Gerber; Gennady Alexandrovich Kudinov; Grigory Ivanovich Kasyanov; Tamara Izovna Nissenbaum; Jury Bortsovich Raikovsky, all of Kharkov; Mikhail Semenovich Somchenko, and Oleg Vladimirovich Filipiev, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky i proektny Institut po Ochistke Tekhnologicheskikh gazov i stochnykh vod i ispolzovaniju vtorichnykh onorgorosursov predpriyaty chernoi metallurgi, Kharkov, USSR

Filed Nov. 3, 1970, Ser. No. 86,555
Int. Cl. C21b 7/10; F28j 13/08
U.S. Cl. 165—105 **2 Claims**

A device for the evaporative cooling of metallurgical furnaces has vertically arranged members provided with pipes for passing a coolant and the pipes of the members arranged at a lower level being connected with the pipes of the members of a higher level by means of external pipes, with the cross section of the pipes of both types in each higher member being greater than that of the lower types.

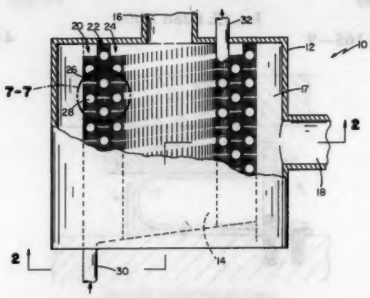
3,692,104

HEAT EXCHANGE

Joseph Gerstmann, Sudbury, Mass., assignor to Steam Engine Systems Corporation, Newton, Mass.

Filed Feb. 3, 1970, Ser. No. 8,280
Int. Cl. F28f 1/14
U.S. Cl. 165—163 **7 Claims**

A thermoconductive, fluid-confining tube has a plurality of thermoconductive elements each having opposed major surfaces, in thermoconductive contact with the outer surface of the tube, each element having a major dimension extending outwardly from the outer tube surface and a major dimension extending substantially parallel to the axis of the tube, and a smallest dimension, and is adapted for heat exchange with a second fluid directed along the surface of the tube, in an



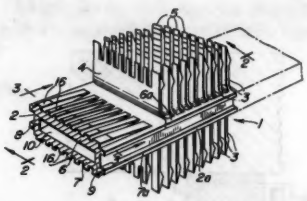
overall flow direction substantially parallel to the smallest dimension of the elements; the thermoconductive elements are spaced apart in the flow direction and define open areas perpendicular to the flow direction with the total per cent of open area perpendicular to the flow direction being less than the total per cent of open area in the plane perpendicular to the tube axis.

3,692,105

HEAT EXCHANGERS

Joseph M. O'Connor, Chicago, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 34,715, May 5, 1970, abandoned. This application Sept. 2, 1970, Ser. No. 68,910
Int. Cl. F28f 1/16
U.S. Cl. 165—181 **9 Claims**



A heat exchanger embodying an elongated tubular member with integral elongated fins extending transversely thereacross and projecting outwardly therefrom, the fins terminating at their outer longitudinal edges in spaced spines.

3,692,106

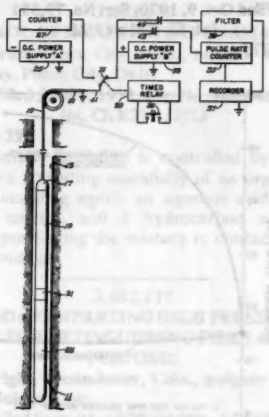
APPARATUS FOR EJECTING FLUID IN A BOREHOLE

Edward R. Basham, 4125 Driskell, Forth Worth, Tex., and William D. Smith, 4217 Sarita, Forth Worth, Tex.

Filed April 12, 1971, Ser. No. 133,155
Int. Cl. E21b 43/00
U.S. Cl. 166—53 **21 Claims**

An improvement in apparatus for ejecting a fluid in a borehole penetrating subterranean formations characterized by; in addition to the conventional surface equipment, wireline, and downhole tool; a motor driving an accurate dispensing cylinder and piston, and a measuring and stopping means connected with the motor for measuring when a predetermined quantity of fluid has been ejected and for stopping the motor. Also disclosed are other aspects of a complete apparatus assembly including:

1. a sensor means in the downhole tool;
2. a timed relay and switch for supplying a timed power pulse to the motor and thereafter monitoring the sensor



means; and

3. specific structure and electrical schematic diagrams for improving the accuracy of the ejection of the quantity of fluid, and for refilling the downhole tool at the surface.

3,692,107

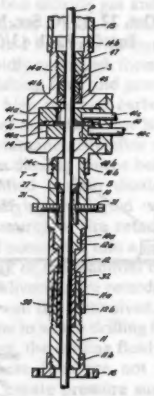
TUBING HANGER ASSEMBLY AND METHOD OF USING SAME FOR HANGING TUBING IN A WELL UNDER PRESSURE WITH NO CHECK VALVE IN TUBING

Damon T. Slator, and Archie W. Pell, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Feb. 23, 1971, Ser. No. 117,946

Int. Cl. E21b *29/00*

U.S. Cl. 166—55 **6 Claims**



A tubing hanger assembly and method of using same for hanging tubing in a well under pressure, wherein the tubing has no check valve therewith. The assembly includes means for sealing off around the tubing, supporting the tubing, cutting the tubing after so sealed and supported, shutting off flow through the tubing above the portion of the tubing remaining in the well after cutting it off, so that the wellhead equipment above the tubing hanger may be removed while leaving the tubing available for injecting chemicals into the well and for performing similar well operations.

3,692,108

PROPELLING DEVICES FOR TOOLS TO LOWER OR RAISE SAFETY APPLIANCES IN OIL WELLS

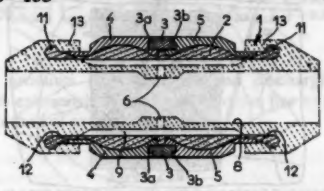
Guy Soulie, No. 6, La Charlotte, 64 Billere, and Gerard Lozach, 39-45, avenue du Nord, 93 Neuilly-plaisance, both of France

Filed April 15, 1971, Ser. No. 134,184

Claims priority, application France, April 17, 1970, 7013942

Int. Cl. E21b *33/127*

U.S. Cl. 166—153 **6 Claims**



A hydraulic propelling device for oil-well tools, consisting of a hollow cylindrical body containing radial openings of small diameter, and characterized by the fact that a membrane of elastically deformable material, both ends of which are embedded in the said hollow cylindrical body, is equipped with one series of metal fittings, attached round the middle at right angles to the axis of the propelling device, with two other series of metal fittings on each side of this first series.

3,692,109

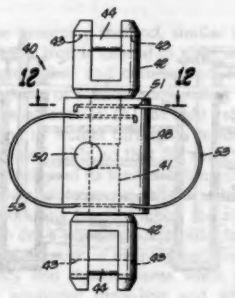
WIRE LINE CENTRALIZER ASSEMBLY

Bobby W. Grayson, 7306 Pembroke Ave., Oildale, Calif.

Division of Ser. No. 27,214, April 10, 1970, Pat. No. 3,572,245. This application Oct. 28, 1970, Ser. No. 84,738

Int. Cl. E21b *17/10*

U.S. Cl. 166—241 **8 Claims**



A wire line centralizer designed for fast assembly to and disassembly from an oil well line. The centralizer body is slotted laterally to receive the wire line and includes fastener means for holding the centralizer in a selected place along the line with the aid of stop means fixed to the line crosswise of the centralizer slot.

3,692,110

IN SITU RETORTING AND HYDROGENATION OF OIL SHALE

Guido O. Grady, Tulsa, Okla., assignor to Cities Service Oil Company

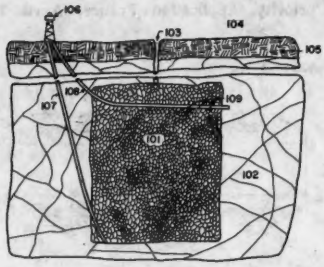
Continuation-in-part of Ser. No. 718,115, April 12, 1968, Pat. No. 3,601,193. This application Dec. 31, 1969, Ser. No. 889,710

Int. Cl. E21b *43/24, 43/26*

U.S. Cl. 166—245 **8 Claims**

Initiation and support of the in situ retorting and hydrogenation of oil shale is accomplished by injecting a retorting fluid

at a multiplicity of points along a substantially horizontal plane in the chimney created by a nuclear explosion. The retorting fluid is injected through an injection well extending generally horizontally in the chimney, preferably in the upper-



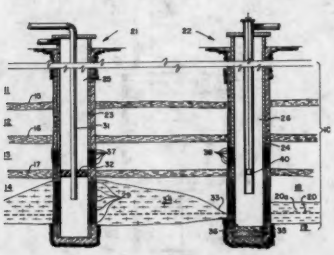
most portion thereof. A series of such injection wells may be employed in order to provide for the distribution of the retorting fluid substantially across the cross-sectional area of the chimney and subsequent hydrogenation and upgrading of the oil shale produced.

3,692,111

STAIR-STEP THERMAL RECOVERY OF OIL

John T. Breithaupt, Houston, Tex., and Raymond T. Garcia, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed July 14, 1970, Ser. No. 54,721
Int. Cl. E21b *43/24*
U.S. Cl. 166—252 2 Claims



A method for producing a viscous oil from a reservoir having a number of permeable oil saturated layers separated by impermeable barriers through which heat may be conducted. According to the method, a water zone and a zone of saturation transition between a water zone and an overlying oil zone of a first formation are used as conduits for carrying heat into the formation. This heat is employed to reduce the viscosity of oil in the formation thus improving the injectivity of the formation and facilitating the initiation of a steam flood therein. Hear from this stream flood is conducted, through an adjoining impermeable barrier and into an adjacent formation which is then steam flooded.

3,692,112

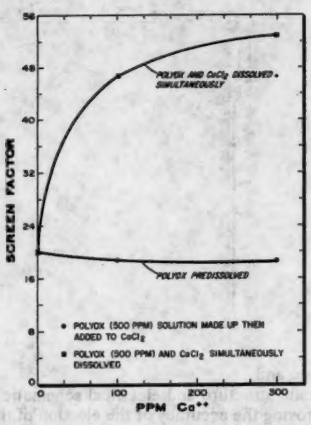
Patent Not Issued For This Number

3,692,113

OIL RECOVERY PROCESS USING POLYALKENE OXIDE POLYMER SOLUTIONS WITH ADDED CATIONS

Charles J. Norton, Denver, Colo., and David O. Falk, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 9, 1970, Ser. No. 79,591
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 8 Claims


SCREEN FACTOR
PPM Ca++
POLYOX AND CaCl2 DISSOLVED SIMULTANEOUSLY
POLYOX PREDISSOLVED
• POLYOX (500 PPM) SOLUTION MADE UP THEN ADDED TO CaCl2
▪ POLYOX (500 PPM) AND CaCl2 SIMULTANEOUSLY DISSOLVED

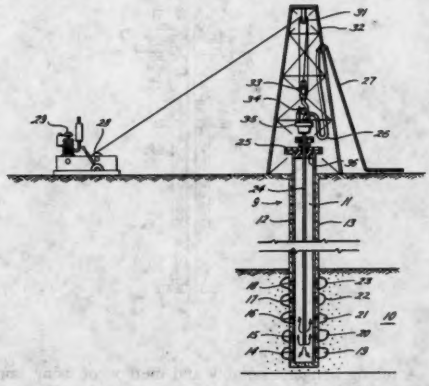
Oil is displaced from oil-bearing formations by injecting into the formations aqueous compositions which include polyalkene oxide polymers and controlled quantities of alkaline earth metal ions. Similar compositions can also be used as viscosity increasing ingredients in other applications.

3,692,114

FLUIDIZED SANDPACKING

Carey Epps Murphey, Jr., Houston, Tex.; Theodore Andrew Simon, Calgary, Alberta, 30, Canada, and Robert Steven Torrest, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,925
Int. Cl. F21b *43/04*
U.S. Cl. 166—278 8 Claims



A method for obtaining an improved pack emplacement when packing a well with sand or gravel. A slurry of sand or gravel is pumped through the end of a tubing string that is extended to near the bottom of the interval to be packed; as the slurry is pumped, the tubing string is raised at a rate that is correlated with the pumping rate in order to maintain a fluidized bed of sand around the end of the tubing string as it moves through the interval to be packed.

3,692,115
Patent Not Issued For This Number

3,692,116
CONTROL OF INCOMPETENT FORMATIONS

Derry D. Sparlin, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

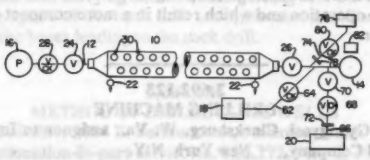
Filed June 1, 1971, Ser. No. 148,946
Int. Cl. E21b *33/13*
U.S. Cl. 166—295 6 Claims

An incompetent formation is controlled by admixing to form a mixture consisting essentially of an organic polymer precursor, a coupling agent, an aqueous acidic catalyst, a hydrocarbon carrier, and a hydrocarbon soluble acidic catalyst; and positioning the mixture in contact with the incompetent formation.

3,692,117
METHOD OF IMPARTING HIGH PRESSURE TO MATERIAL FOR EXTINGUISHING FIRES AND OTHER PURPOSES

Arthur G. Wright, Westminster, Colo., assignor to Donald G. Stroh, Golden, Colo.

Filed Sept. 21, 1970, Ser. No. 74,085
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R 12 Claims



A method for introducing material under high pressures into selected areas for various purposes which comprises confining non-gaseous carbon dioxide under pressure, applying heat thereto to produce high pressure carbon dioxide gas, conducting the gas into the material and directing the formed high pressure mixture of carbon dioxide gas and material into the selected area. The invention is used to create pressure surges in oil well drilling fluid in a line and for hurling fire retardant material into fires to rapidly extinguish them.

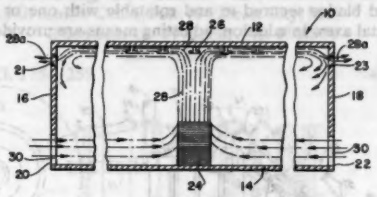
A system for extinguishing fires and preventing explosions comprising a source of high pressure carbon dioxide gas for delivering a fire retardant material under high pressure to the point of combustion instantaneously after combustion starts, the high pressure carbon dioxide source being a series of cartridges containing liquified carbon dioxide provided with heater elements for gasifying the liquid carbon dioxide and communicating with a source of fire retardant material in a tank, or with a manifold connected into a line carrying fire retardant material, the tank or the manifold being connected to a delivery channel for delivering fire retardant material to the point of flame. If an oil well fire is involved, the manifold may be connected into the line in which drilling fluid is delivered to an oil well during drilling, the drilling fluid serving as the fire retardant material. Where fires are not involved, the apparatus can be used to create pressure surges in the drilling fluid line for various purposes.

3,692,118
FIXED FIRE EXTINGUISHING SYSTEM UTILIZING RECIRCULATION OF COMBUSTION PRODUCTS

Cheng Yao, Weston, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed April 7, 1971, Ser. No. 131,988
Int. Cl. A62c *1/14*
U.S. Cl. 169—1 A 28 Claims

A fixed fire extinguishing system wherein one or more aspiration members are disposed in an elevated position relative to the structure to be protected by fire. A sensor is adapted to respond to information received from the fire to actuate the aspiration member, and the latter receives the

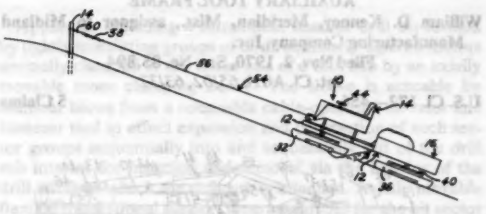


combustion products from the fire and discharges same together with extinguishing agent back to the fire to smother the fire. A method of extinguishing a fire.

3,692,119
WINCH CARRYING SNOW GROOMING VEHICLE SUPPORTED BY SKIDS AND POWERED BY AN ANCHORED DRAWLINE

Jasper J. Tucker, 932 Mira Mar, Medford, Oreg.

Filed April 23, 1971, Ser. No. 136,898
Int. Cl. E01b *4/00*; B61b *11/00*
U.S. Cl. 172—23 11 Claims



A novel ski slope grooming method, similar to an ironing procedure in which the iron is caused to glide smoothly over the surface to be smoothed and compressed, is carried out through the employment of a novel snow-riding vehicle, having the following characteristics: (a) the light vehicle rides on the snow, distributing its weight through a series of long and broad, smooth-bottomed skids, so that the skids carry the entire weight of the vehicle and its load, substantially evenly distributed on the surface of the snow; (b) the vehicle exerts no driving traction or braking traction upon the surface of the snow, there being no drive wheels or caterpillar treads; (c) the vehicle accomplishes its work of evening and compacting the snow with efficiency and thoroughness while pulling itself uphill through an anchored draw-line and while coasting downhill under the pull of gravity but restrained by the draw-line; (d) the vehicle includes an optionally usable scraper blade which can be set at various heights for breaking up lumps and evening the surface of the snow, but no other structure which could oppose a significant resistance to the progress of the vehicle over the snow; and (e) provision is made for a single operator, riding the vehicle, to steer the vehicle, to control a drive motor through which the draw-line can be reeled in, and to control a reel brake for paying out the draw-line and thereby controlling the rate at which the vehicle coasts downhill.

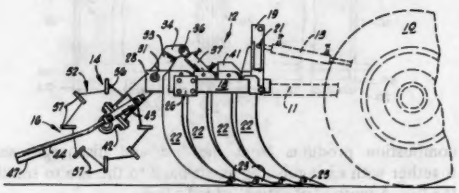
3,692,120
TILLING APPARATUS

Ted L. Cline, P.O. Box 38, Rush Springs, Okla.

Filed May 13, 1970, Ser. No. 36,929
Int. Cl. A01b *49/02*, *21/02*
U.S. Cl. 172—151 13 Claims

There is provided a frame having on one end thereof means, such as a chisel plow, for scarifying the earth. Near the rear

portion of the frame, in a position behind the plow, means is located for pulverizing earth thrown up by the plow. The pulverizing means may include one or more reel structures, each of which has a plurality of horizontally-extending, radially disposed blades secured to and rotatable with one or more horizontal axes. In addition, adjusting means are provided for

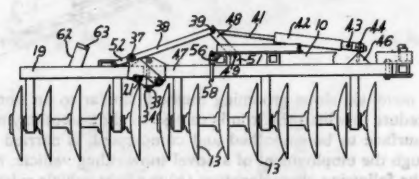


rotating the pulverizing means in a limited arc around a portion of the rear of the plow to increase or decrease the depth of operation of the pulverizing means. If desired, a leveling blade may be secured to a portion of the pulverizing means to provide additional smoothing to the earth over which the apparatus is drawn.

3,692,121
HINGE LOCKING MEANS FOR A FOLDABLE AUXILIARY TOOL FRAME

William D. Kenney, Meridian, Miss., assignor to Midland Manufacturing Company, Inc.

Filed Nov. 2, 1970, Ser. No. 85,894
Int. Cl. A01b *65/02, 63/32*
U.S. Cl. 172—456 **5 Claims**



An earth working implement comprising a main frame which may carry earth working tools, together with foldable extendable side gangs of working tools. The invention is particularly directed to means to raise, lower, and lock the wing gangs in positive manner when in the working position. The invention embodies mechanism which permits the raising, lowering, locking and unlocking to be accomplished by a single motor such for instance, as a fluid pressure cylinder. The apparatus may be tractor drawn and the controls for the various cylinders may be located in easy reach of the tractor operator.

ERRATUM

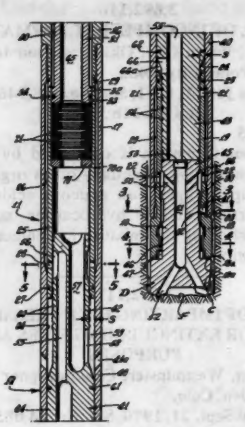
For Class 172—116 see:
Patent No. 3,692,164

3,692,122
HIGH FREQUENCY PNEUMATICALLY ACTUATED DRILLING HAMMER

Alfred R. Curington, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles County, Calif.

Filed Dec. 23, 1970, Ser. No. 100,887
Int. Cl. E21b *1/06*
U.S. Cl. 173—119 **15 Claims**

A drilling hammer in which a hammer piston in a cylinder is propelled in opposite directions by compressed air to impact repeatedly upon an anvil connected to a drill bit. On its return stroke, the hammer piston impacts against a spring device, storing energy therein which is returned by the spring device to the piston on its downstroke, the spring device causing the frequency of reciprocation of the hammer piston to increase considerably, correspondingly increasing the power output of

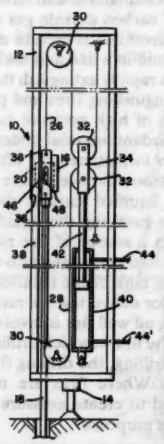


the drilling hammer. Preferably, the spring device comprises a stack of Belleville springs or spring discs, which are more efficient in operation and which result in a more compact drilling hammer.

3,692,123
DRILLING MACHINE

Laszlo Gyongyosi, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,271
Int. Cl. E21c *5/06*
U.S. Cl. 173—147 **2 Claims**



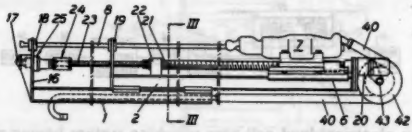
A drilling machine comprising a tower formed of elongated members in which a drilling head assembly is slidably disposed for movement relative thereto by means of slide brackets. The brackets are slotted, and slidably receive dowels extending from the drilling head assembly to effect a loss of motion between the drilling head assembly and the brackets. Power-operated feed chains, in a manner well known, translate the slide brackets along the elongated members.

3,692,124

FEED DEVICE FOR A ROCK DRILL

Erich Voldemar Kimber, 3 Mariebergsvagen, 130 50 Vendelso, and Josef Lewkowicz, 10 Edinsvagen, 130 10 Ektorp, both of Sweden

Filed March 29, 1971, Ser. No. 128,810
Int. Cl. E21c 5/02
U.S. Cl. 173—160 7 Claims



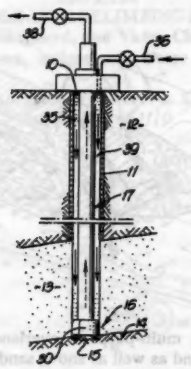
A feed device which is extendible by means of two cooperating feed screws and which comprises a coupling for locking the screws against rotation relative to each other or one of them relative to a girder unit. By interlocking the screws only half the feed range is available, and by locking one of them to a girder unit the full extended length can be used. One of the screws is hollow and provided with internal as well as external threads, the latter of which cooperates with a nut on a rock drill carrying slide. A hose guiding reel travels with half the speed of the rock drill and maintains a uniform tension in the hoses leading to the rock drill.

3,692,125

METHOD OF DRILLING OIL WELLS

James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif.

Continuation-in-part of Ser. No. 821,272, May 2, 1969, abandoned. This application Feb. 23, 1971, Ser. No. 117,966
Int. Cl. E21b 21/04
U.S. Cl. 175—65 8 Claims



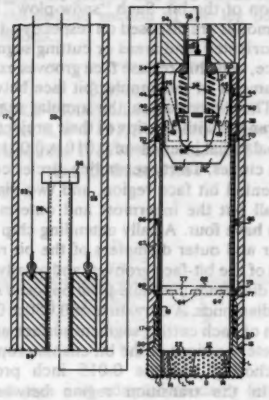
A combination drilling and stimulation process for drilling oil wells and especially those through oil sand which contain a great deal of intergranular clay, which makes use of a clear solution containing calcium chloride instead of the usual drilling mud. The solution of calcium chloride is treated with a liquified surfactant, and the mixture is forced down the annulus formed between the drill pipe and drill collars, and the wall of the drill hole. At the bottom of the well the solution passes the cutting face of the bit and picks up the chips, flushing them outwardly through the drill collars and drill pipe and out at the top.

3,692,126

RETRACTABLE DRILL BIT APPARATUS

Frank C. Rushing, 6436 Belleview Dr., and Albert B. Simon, 2918 Greenlow Court, both of Ellicott City, Md.

Filed Jan. 29, 1971, Ser. No. 110,870
Int. Cl. E21b 9/26
U.S. Cl. 175—259 4 Claims



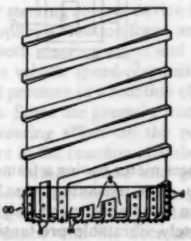
Apparatus including a retractable annular drill bit formed by tightly interfitting groups of bi-directionally tapered sectors normally clamped in the lower end of a drill sub by an axially movable inner clamping sleeve. The sleeve is actuable by hammer blows from a releasable cable-operated elevator and hammer tool to effect expansion and contraction of such sector groups sequentially into and sequentially out of the drill sub interior for insertion and removal via the interior of the drill string to which the drill sub is attached. Axially movable flexible translational support stem assemblies for the bit sector groups, in affiliation with a system of radially fixed stop shoulders, cooperate with axial movement of the clamping sleeve to enable it to effect such sector group expansion and contraction. A separately removable core barrel accepts the core sample made by the bit.

3,692,127

ROTARY DIAMOND CORE BIT

Walter R. Hampe, Severna Park; Albert B. Simon, Ellicott City, both of Md.; William H. Hampton, and William E. Decker, both of Punxsutawney, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh and Hoffman Diamond Products, Inc., Punxsutawney, Pa., part interest to each

Filed May 10, 1971, Ser. No. 141,684
Int. Cl. E21b 9/36
U.S. Cl. 175—330 4 Claims



Described is an improved rotary diamond core bit offering longer life in dry and in chip flush drilling. Grade AAAA dodecahedron diamonds within the range of 18 to 22 diamonds per carat size, each having a select rectangular

pyramid point region free of internal flaws and with an included angle of 100° to 120°, are anchored in a bit matrix to project such select point regions outwardly a distance of 0.015 ± 0.003 inch from a semi-round angular bit face in hard-vector face-set orientation in the rotary cutting direction of the bit and with a negative rake angle of nominally 4-½°. Such bit-face diamonds are arranged in circumferentially spaced-apart rows extending radially outward and backward with respect to rotary motion of the bit. Such "snow-plow" linear arrays of bit-face diamonds are disposed on respective discrete similarly snow-plow-oriented land areas or cutting segments of the annular bit face, and chip release face grooves extend from inner to outer diameter of the annular bit face between all cutting segments. The diamonds on the annular segmented cutting face are arranged with the tips of their projecting cutting portions at equal radial intervals of 0.010 ± 0.001 inch along concentric line circles. Thirty-seven line circles cover the full annular segmented bit face region, and two diamonds are employed in all but the innermost and outermost line circles, which each have four. Axially extending chip release grooves at the inner and outer diameters of the bit register with opposite ends of the bit-face grooves, and axially extending rows of reaming diamonds continue from opposite ends of the rows of bit-face diamonds. A curvature of 0.050 ± 0.005 inch at the intersection of each cutting segment surface and the inner and outer diameter portions of the bit enable proper non-girth-exposing anchoring and the 0.015 inch projection of the diamonds in the transition region between the bit-face diamonds and the reaming diamonds at the interior and exterior surfaces of the bit. The axially extending chip release grooves in the outer diameter portion of the bit feed into auger grooves formed in a continuing shank portion of the bit for dry or wet chip removal.

3,692,128

ELECTRICAL MASS METER

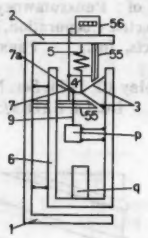
Mario Gallo, Zurich, Switzerland, assignor to Gallo Wirth & Co., Zurich, Switzerland

Continuation of Ser. No. 758,319, Sept. 9, 1968, abandoned. This application Jan. 26, 1971, Ser. No. 109,973

Claims priority, application Switzerland, Sept. 25, 1967, 13392/67

Int. Cl. G01g 3/14

U.S. Cl. 177—210 **6 Claims**



An electrical mass meter having a frame with a baseplate, a weighing platform, a pre-tensioning mass linked to a force distributor which is in turn linked to the weighing platform, a plurality of transversely vibratable pre-tensioned strings having one end fixed to the weighing platform and the other end to the force distributor, and a transmitting element fixed to the frame and the strings, supporting thereby the weighing platform and transmitting to the strings an additional force proportional to a mass to be measured.

3,692,129

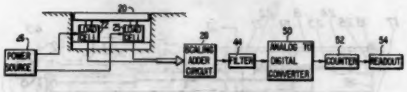
LOAD CELL WEIGHING SYSTEMS

Chapin A. Pratt, Rutland Town, Vt., and Gilbert A. Godwin, Oakland, N.J., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed April 12, 1971, Ser. No. 132,962

Int. Cl. G01g 3/14, 23/16, 23/37

U.S. Cl. 177—211 **18 Claims**



An electrical load cell-type weighing system having a plurality of load cells supporting a load-receiving structure and providing electrical potentials, the sum of which is a function of the weight of a load applied to the load-receiving structure. Summing resistor networks directly connect the load cell bridges independently of each other to a summing junction of a single ended operational summing amplifier. The potentials produced by the load cells are algebraically summed at the summing junction. Another disclosed feature pertains to a defective load cell testing circuit comprising a switch for selectively providing a short circuit connection across the output terminals of each load cell bridge to determine whether the load cell is defective. Another feature pertains to a special operational amplifier summing network which selectively provides weight measurements in different units of mass such as pounds and kilograms.

3,692,130

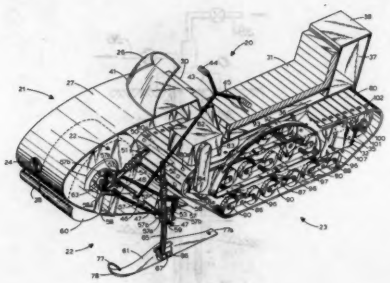
IMPROVED OVERLAND VEHICLE

Jack C. Stacy, Jr., Rt. 2, Box 184, Santa Fe, N. Mex.

Filed Feb. 24, 1970, Ser. No. 13,526

Int. Cl. B62m 27/02

U.S. Cl. 180—5 R **6 Claims**



An improved multi-purpose overland vehicle used for traversing dry land as well as snow, sand, and wet or marshy land, having an improved independent front suspension and steering system, with a mechanism for quickly exchanging front wheels for skis and vice versa, and a wobble boggie drive track support system, suspended by longitudinal leaf springs designed so as to provide maximum traction when traversing rough terrain and to elevate the rear idler sprocket mechanism of the track support assembly if desired.

3,692,131

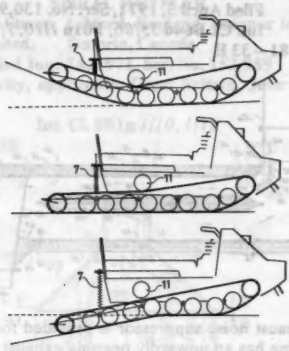
Patent Not Issued For This Number

3,692,132

IMPROVED MOTOR SLEDGE

Kyosti Johannes Pollanen, Isokyla, Finland, assignor to Velsa Oy, Kurikka, Finland

Filed April 26, 1971, Ser. No. 137,477
Claims priority, application Finland, April 27, 1970, 1168
Int. Cl. B62m *27/02*; B62d *55/16*
U.S. Cl. 180—5 R 2 Claims



In a motor sledge having a supplementary frame extending from the rear end of the frame construction and flexibly pivoting around a horizontal axis the slackening of the common drive belts due to upward movement of the supplementary frame is prevented by a pair of rolls freely rotatable above the point of pivotement. When the supplementary frame pivots upwardly the upper surface of the drive belts are pressed against the rolls.

3,692,133

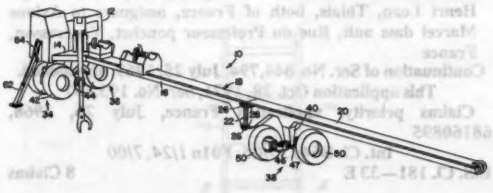
Patent Not Issued For This Number

3,692,134

POWER FOLDABLE DELIMBING PLATFORM

Leonard Laverne Shepherd, and Victor Charles Pierrot, both of Dubuque, Iowa, assignors to Deere & Company, Maline, Ill.

Filed April 26, 1971, Ser. No. 137,154
Int. Cl. B62d *61/10*
U.S. Cl. 180—12 4 Claims



A self-propelled delimbing machine includes a horizontal T-shaped frame having a length suitable for supporting full-length trees. First and second ground wheel assemblies are respectively supportingly connected to the opposite ends of the head portion of the frame and a third ground wheel assembly is supportingly connected to the leg portion of the frame at a location spaced more than half the length of the leg portion from the head portion. The leg portion of the frame is divided into first and second sections of approximately equal length, the first section extending from the head portion of the frame and the second section being connected in end-to-end relationship to the first section by a vertical hinge joint. The hinge joint is locked to prevent pivoting when the machine is in a delimbing or working mode and is unlocked to permit the second section to be pivoted to a folded position alongside the first section to shorten the delimbing machine for transport. The pivoting of the second section on the hinge joint is accomplished by operation of the third wheel assembly, which includes drivable and steerable wheels. Stabilizer leg means are mounted on the head portion of the frame and are selectively operated to engage the ground and give added stability to the vehicle when the second section of the leg portion of the frame is being folded.

3,692,135

SELF-PROPELLED PIPE CART

Paul Holzmann, Rt. 3, Box 151, Van Buren County, Mich.

Filed June 1, 1970, Ser. No. 42,157
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 R 6 Claims

Self-propelled pipe cart adapted to carry lengths of pipe comprises a frame having a platform and wheels mounted on said frame. Each wheel is driven by a separate hydraulic motor, preferably mounted on a floating axle.

3,692,136

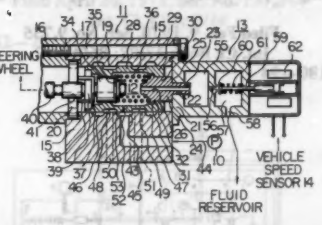
Patent Not Issued For This Number

3,692,137

VEHICLE POWER STEERING CONTROL DEVICE

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed May 11, 1971, Ser. No. 142,216
Claims priority, application Japan, Aug. 6, 1970, 45/68296
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R 7 Claims

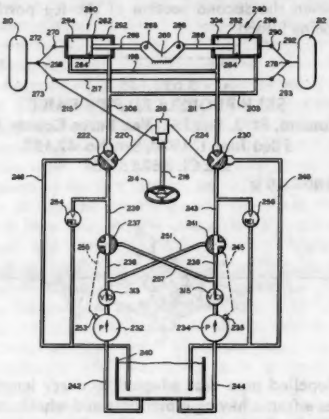


A vehicle power steering control device including a reaction assembly which applies a reaction force on the steering wheel that depends on both steering effort and vehicle speed. The device comprises a vehicle speed-responsive modulator valve adapted to control pressure in a reaction chamber transmitted from a fluid pump. Since the pressure from the fluid pump is proportional to steering effort on the power cylinder, the modulated pressure in the reaction chamber depends on both steering effort and vehicle speed and gives rise to a corresponding reaction applied on the steering wheel. The modulator valve is arranged to reduce the pressure in the reaction chamber in accordance with the decrease in vehicle speed. Thus, for low vehicle speeds, the driver encounters a small resistance in turning the steering wheel and, on the other hand for high vehicle speeds, a large turning resistance is provided to avoid the danger of too rapid turning of the steering wheel and road wheels.

3,692,138
DUAL STEERING SYSTEM

Kenneth C. Witt, Buchanan, Mich., assignor to Clark Equipment Company

Filed Dec. 9, 1970, Ser. No. 96,559
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 4 Claims

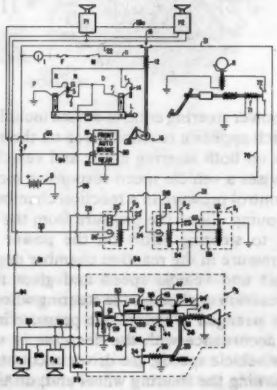


A dual fluid steering system utilizing two pumps to supply fluid to actuators which turn the wheels for steering. The control valves and other portions of the system are arranged so that each of the pumps supplies fluid to both of the actuators during normal operation whereby if one of the pumps fails, the other pump can continue to be utilized to operate both actuators and turn both of the wheels at a reduced rate under emergency conditions resulting from the failure of one pump. One control valve is connected to the head end of one actuator and the rod end of the other. The other control valve is connected to the rod end of the one actuator and the head end of the other.

3,692,139
PARKING DAMAGE PREVENTION

Lajos Pongracz, 429 Fairmount Ave. Apt. 110, Jersey City, N.J.

Filed Feb. 9, 1970, Ser. No. 9,735
Int. Cl. B60k 27/08; B60t 7/12
U.S. Cl. 180—94 10 Claims

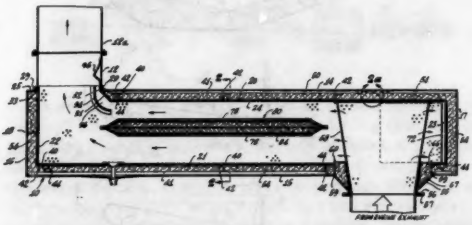


An automatic braking system for parking which uses electromagnets to sense the proximity of adjacent cars and applies the brakes before actual contact is made. A throttle-limit is preferably included to prevent involuntary override of the brake system by excessive gas pedal travel.

3,692,140
EXHAUST NOISE SUPPRESSOR FOR GAS TURBINE

Cloyd D. Smith, 14928 La Cumbre Dr., Pacific Palisades, Calif.

Filed April 5, 1971, Ser. No. 130,989
Int. Cl. B64d 33/06; F01n 1/10, 7/18
U.S. Cl. 181—33 H 15 Claims



An exhaust noise suppressor is provided for a gas turbine. The turbine has an upwardly opening exhaust discharge port, and the suppressor is mounted thereabove, with its exhaust intake port receiving the turbine exhaust.

The suppressor comprises an elongated exterior shell, leading from the intake port to a stack, and inside thereof is a perforated interior wall structure or liner, spaced inside the shell walls to provide a space for a packing of high heat resistant sound insulation material. The interior perforated liner attains a high temperature, e.g., of the order of 1,100° F., and is subject to substantial thermal expansion. The invention features an arrangement by which the interior liner is free for thermal expansion within the longitudinal direction of the shell, as well as transversely thereof.

The turbine exhaust gas entering the intake port of the turbine casing opens inside a perforated conical diffuser, which reduces back pressure on the turbine to an important degree.

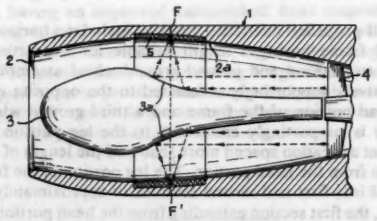
Running down the center of the longitudinal gas passage in the casing is a sound absorbing structure comprised of perforated side walls containing high heat resistant sound absorbing material.

The perforated walls are covered with fiber glass cloth.

3,692,141
METHOD OF AND MEANS FOR NOISE ATTENUATION

Andre Julien Labussiere, Fontenay-Fe-Fleury, and Joseph Henri Leon, Thiais, both of France, assignors to Avions Marcel dass ault, Rue du Professeur pouchet, Vaucresson, France

Continuation of Ser. No. 844,794, July 25, 1969, abandoned.
This application Oct. 28, 1971, Ser. No. 193,597
Claims priority, application France, July 26, 1968, 68160895
Int. Cl. B64d 33/06; F01n 1/24, 7/00
U.S. Cl. 181—33 E 8 Claims



The noise originating from acoustic energy transmitted through a duct is suppressed by focusing it, by means of

properly designed acoustic reflectors, so that it is concentrated on localized restricted zones of the duct wall, the provision of adequate sound absorptive linings being limited to these restricted zones. This noise suppressing system is applicable to air intakes of turbojets, turbofan casings, silencers for the jet of jet propulsion units.

3,692,142

SPIRAL MUFFLER

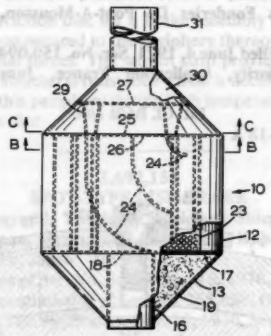
Leslie William Stemp, Ashford, England, assignor to Cowl Industries Limited, Ontario, Canada

Filed June 14, 1971, Ser. No. 152,959

Claims priority, application Great Britain, June 19, 1970, 29,825/70

Int. Cl. F01n 1/10, 1/12

U.S. Cl. 181—50 **11 Claims**



A muffler or silencer having a spiral duct centrally disposed within a housing, with sound absorbent material between the ends of the housing and the ends of the spiral duct to reduce noise.

3,692,143

EXTENSIBLE LADDER

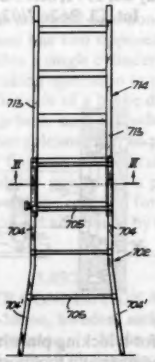
Walter Kummerlin, Gerokstrasse 6, 7120 Bissingen, and Nikolaus Adalbert Kummerlin, Wannenstrasse 53, 7220 Schwenningen, both of Germany

Filed Jan. 6, 1971, Ser. No. 104,395

Claims priority, application Germany, Jan. 14, 1970, P 20 01 416.8

Int. Cl. E06c 1/38

U.S. Cl. 182—24 **13 Claims**



An extensible ladder which is provided with at least two pairs of telescopically slidable stringers and in which each rung of the outer pair of stringers is divided longitudinally into two rung parts between which the rungs of the other pair of stringers may be shifted longitudinally or locked so as to be in alignment with the rungs of the inner stringers. This ladder may also be designed as a convertible ladder consisting of two of these extension ladders which are pivotably connected at one end to each other so as either to permit them to be pivoted to an acute angle relative to each other to form a self-supporting double ladder or to be pivoted so as to be in straight alignment with each other to form a long straight ladder.

3,692,144

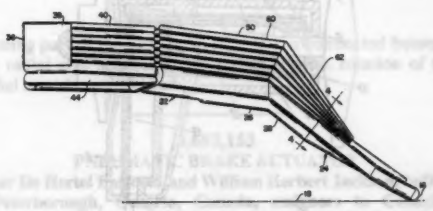
FLUID DISTENSIBLE TRUSS

James R. Summer, and Randall F. White, both of Brielle, N.J., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 815,887, April 14, 1969, abandoned. This application Nov. 18, 1970, Ser. No. 90,819

Int. Cl. A62b 1/20; B65g 11/10

U.S. Cl. 182—48 **20 Claims**



Inflatable apparatus has a ramp body which is deployable over an aircraft wing as a walkway having a fabric walkway surface configured as essentially flat by tensioned partition strips in the ramp body, imparting to its walkway surface a slightly arcuately ribbed configuration. An inflatable slide body coupled to an end of the ramp body may support the ramp body end, or alternatively the end may be supported by an integral inflatable column body portion extending from the ramp end to the ground.

3,692,145

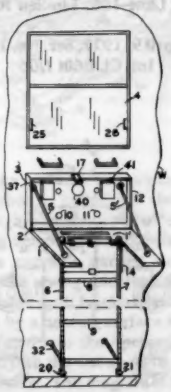
EMERGENCY FIRE ESCAPE MEANS

Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y.

Filed April 26, 1971, Ser. No. 137,244

Int. Cl. E06c 9/14

U.S. Cl. 182—70 **3 Claims**



A fire escape device adapted to be mounted to an external wall of a building below a window. A platform is pivotally mounted on a wall. The chain or wire ladder is connected to the platform. When the platform is folded up, it provides an

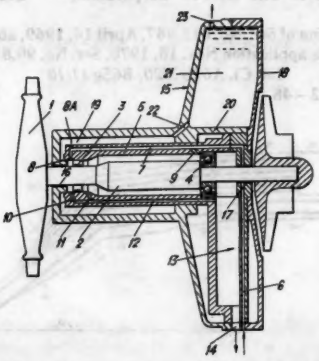
enclosure for the folded ladder. When the enclosure is opened, the platform falls pivotally to a horizontal position. The platform has a trap door in it, operating on hinges that also allow it to pivot downward and release the ladder inside. The ladder descends to the ground.

3,692,146

GAS TURBINE WITH BEARING COOLING MEANS

Lawrence Butler, Solihull, England, assignor to Leyland Gas Turbines Limited, Solihull, England

Filed Feb. 8, 1971, Ser. No. 113,314
Int. Cl. F16n 7/02
U.S. Cl. 184—6.1 4 Claims



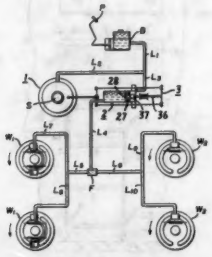
A regenerative gas turbine engine in which each of the turbine shaft bearings is supported in a housing which forms part of a lubricating system and which has oilways leading to and from the corresponding bearing. Surmounting the bearing housing is an oil reservoir which, during running of the engine, becomes filled with oil bled from one of the oilways of the bearing housing. The reservoir has at its top an overflow hole through which surplus oil is returned to a sump and, when the engine is shut down, the oil stored in the reservoir is exploited to cool the shaft bearings.

3,692,147

BRAKE SYSTEM USING VEHICLE'S OWN KINETIC ENERGY TO CONTROL THE BRAKE AND THE DEVICE THEREOF

Chin-Jung Yeh, No. 307, Chung Cheng Rd, Hua-Lien, and Yu-Chi Yang, No. 3, Lane 196, Lin-Sen Rd., both of Taiwan, China /Taiwan

Filed April 9, 1971, Ser. No. 132,866
Int. Cl. B60t 1/06
U.S. Cl. 188—2 R 7 Claims



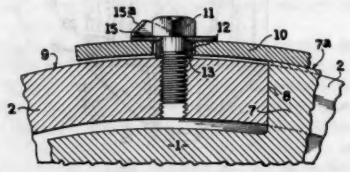
Disclosed herein is a brake system for a vehicle, wherein the kinetic energy of the vehicle is used to control the brake. An auxiliary brake wheel, and an intermediate high pressure oil cylinder connected with the brake wheel by a link and piston rod assembly, are fitted between a brake master cylinder in the hydraulic brake system and an oil passage which distributes the brake fluid to the joints of branch oil tubes of various brake wheels. The auxiliary brake wheel is fitted to the end of the vehicle transmission shaft; the auxiliary brake wheel uses an angular displacement of its braking disc, upon application of the brakes, to produce a rectilinear motion of the link and piston rod assembly, thereby further pressurizing the high pressure oil cylinder; and the high pressure oil cylinder is connected by fluid lines to each of the vehicle wheels, so that a strong, fast-acting, and efficient braking effect is obtained.

3,692,148

DISC BRAKE AND SUPPORT MEANS THEREFOR

Jean-Marc Hauth, Pont-A-Mousson, France, assignor to Societe Des Fonderies De Pont-A-Mousson, Nancy, France

Filed June 4, 1971, Ser. No. 150,094
Claims priority, application France, June 16, 1970, 7022037
Int. Cl. B60t 1/06
U.S. Cl. 188—18 A 8 Claims



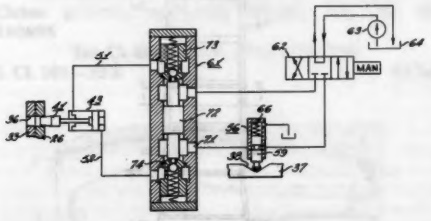
Disc brake having a floating disc driven in rotation by a drum through keying means. The keying means comprise projections on the disc which extend into recesses in the drum. A spring strip resiliently engages an outer peripheral face of each projection and is secured to the drum at each end of the strip by means which allow freedom of movement of the strip axially and circumferentially of the drum and maintain the strip in engagement with the peripheral face and substantially parallel to a plane perpendicular to the axis of rotation of the drum.

3,692,149

CAM ACTUATED INTERLOCK FOR PIVOT ARM

John H. Evans, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 26, 1971, Ser. No. 146,900
Int. Cl. B62c 7/02
U.S. Cl. 188—69 9 Claims



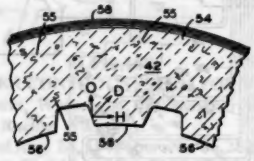
A control circuit for a locking pin which releasably locks a swingable support member of a tool positioning mechanism to a vehicle frame member. A cam actuated blocking valve in the circuit prevents movement of the locking pin actuator when the pin is not aligned with a hole. A locking valve in the locking pin actuator circuit insures locking pin tightness.

3,692,150

OXIDATION BARRIER FOR A CARBON FRICTION DISC

Joseph P. Ruppe, Jr., South Bend, Ind., assignor to The Bendix Corporation

Filed Oct. 26, 1970, Ser. No. 84,027
Int. Cl. F16d 55/36
U.S. Cl. 188—71.5 4 Claims



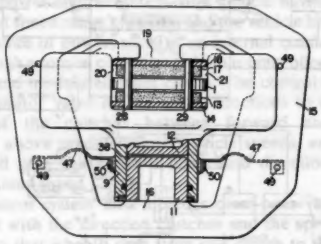
A carbon friction disc for a brake assembly having woven strips of carbon secured to the periphery thereof which is subjected to radial forces. The woven strip provides the carbon disc with the structural resistance which is necessary to inhibit oxidation of this periphery during high temperature operation of the friction disc.

3,692,151

SPOT-TYPE DISK BRAKE

Toyoaki Kobayashi; Yoshinori Mori, and Shiego Aiki, all of Kariya, Japan, assignors to Aishin Seiki Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 3,550, Jan. 16, 1970, abandoned, which is a continuation of Ser. No. 765,858, Oct. 8, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,435
Claims priority, application Japan, Oct. 16, 1967, 42/66797; Oct. 16, 1967, 42/66798; Nov. 14, 1967, 42/95858
Int. Cl. F16d 55/228
U.S. Cl. 188—72.5 6 Claims



A hydraulic motor is mounted on a non-rotating or stationary part of a vehicle and has two opposed pistons in head-to-head arrangement within a single cylinder with open ends, one piston operating in braking operation to press, directly, a friction pad against one flat side of a brake disk fixed coaxially to a rotating part of a wheel, and the other piston operating, through a yoke-like movable member to press another friction pad against the other flat side of the brake disk. The friction pads are held and slidably guided by a part of the hydraulic motor structure, whereby the reaction force due to braking on the friction pads is received and borne by the stationary part.

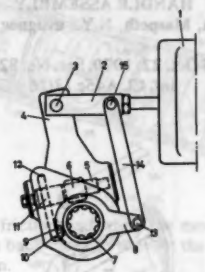
3,692,152

SLACK ADJUSTER CONNECTION ARRANGEMENT

Karl Bertil Larsson, Malmo, Sweden, assignor to Srienska Aktienbolaget Bromsregulator, Malmo, Sweden

Filed Dec. 15, 1970, Ser. No. 98,351
Int. Cl. F16d 65/56
U.S. Cl. 188—79.5 K 4 Claims

A slack adjuster is shown which is splined to a rotatable brake shaft. The slack adjuster serves to rock about that shaft by a linkage coupling the shaft to a brake applying piston rod. The slack is adjusted by means of a worm wheel mechanism mounted on and secured against rotation relative to the shaft wherein slack is adjusted by altering the position of the linkage about the shaft when the worm wheel is rotated. In the linkage is coupled a radial arm rotatable about said shaft in a housing



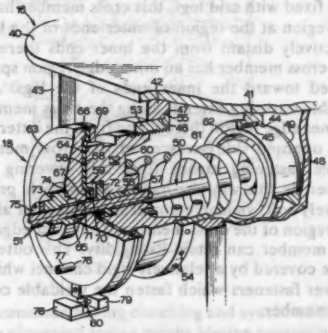
forming part of the linkage. A rigid link is connected between the radial arm and the piston rod to confine rotation of the radial arm about said shaft.

3,692,153

PNEUMATIC BRAKE ACTUATOR

Peter De Hertel Eastcott, and William Herbert Jackson, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

Filed Jan. 29, 1971, Ser. No. 110,990
Claims priority, application Canada, April 14, 1970, 080,032
Int. Cl. F16d 65/24
U.S. Cl. 188—170 7 Claims



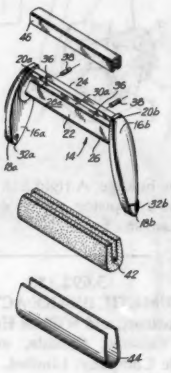
A pneumatic brake actuator comprises a coaxial array of a disc-shaped brake shoe, a cylindrical shoe carrier supported for axial movement, a compression coil spring, a fixed cylindrical carrier, a ring diaphragm, a disc-like head, a nut, and a rod secured to the movable carrier and projecting axially therefrom through the spring and through axial openings in the fixed carrier, diaphragm, head and nut. The rod is guided for axial movement by a bearing surface in the opening of the fixed carrier. It is fitted into the opening in the head and its free end is threaded into the nut so as to compress the spring between the two carriers. The diagram is located between flat surfaces on the fixed carrier and the head and is secured to the head along its outer and inner edges. An opening is provided in the head for admitting compressed air into the space between the head and the diaphragm. In operation, the spring applies the brakes and the compressed air releases them.

3,692,154
Patent Not Issued For This Number

3,692,155
HANDLE ASSEMBLY

Joseph N. Laurita, Maspeth, N.Y., assignor to Lark Luggage Corporation

Filed Oct. 22, 1970, Ser. No. 82,887
Int. Cl. A45c *13/26*
U.S. Cl. 190—57 **8 Claims**



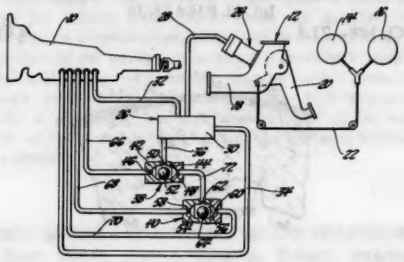
A handle assembly adapted to be connected with articles such as luggage and the like for carrying the same. The handle assembly includes substantially rigid and substantially U-shaped frame having a pair of opposed legs respectively terminating in inner ends to be connected with the article which is to be carried. An elongated cross member extends between and is fixed with said legs, this cross member having an outer edge region at the region of outer ends of the legs which are respectively distant from the inner ends thereof. The elongated cross member has an inner edge region spaced from but directed toward the inner ends of the legs. An elongated yieldable covering extends along the cross member at least at the inner edge region thereof and from the latter at least partly along opposed side surfaces of the cross member, while a suitable fastening means fixes this covering to the cross member. In this way the handle assembly is provided with a relatively soft, yieldable construction at least along the inner edge region of the cross member. The outer edge region of the cross member can retain its rigidity. This outer edge region can be covered by a relatively rigid channel which also serves to cover fasteners which fasten the yieldable covering to the cross member.

3,692,156
PARKING BRAKE RELEASED BY TRANSMISSION CONTROL PRESSURES

Nils Peder Week, Allen Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1971, Ser. No. 188,020
Int. Cl. B60k *29/02*
U.S. Cl. 192—4 A **2 Claims**

A vehicle parking brake release control mechanism is hydraulically actuated to release the parking brake. The mechanism is actuated by transmission line pressure and is controlled by the admission of the highest of transmission governor pressure or forward or reverse pressures to a control valve which controls the admission and exhaust of line pressure from the hydraulic release servomotor. The release servomotor is de-energized when there is insufficient governor or forward or reverse pressure to actuate it. When the servomotor is energized the brakes may be modulatingly applied

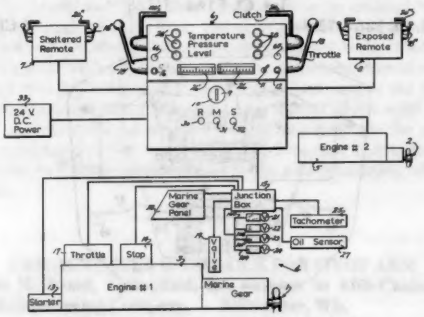


through the parking brake control mechanism to stop the vehicle.

3,692,157
ELECTRICAL CONTROL APPARATUS FOR AN ENGINE AND VARIABLE TRANSMISSION APPARATUS

Bruce C. Arnold; John T. Auman, Jr., both of Racine, Wis.; Charles G. Kinnison, Cudahy, Wis., and James E. Lantz, Racine, Wis., assignor to Turin Disc Incorporated, Racine, Wis.

Filed Jan. 13, 1971, Ser. No. 106,104
Int. Cl. B60k *29/00*; F16d *67/00*
U.S. Cl. 192—.098 **44 Claims**



A dual marine gear installation includes three remote controls, one of which is a master control. Each control has control levers for positioning signal potentiometers providing input control signals to an engine governor throttle actuator and to a valve of a hydraulically actuated variable clutch. Each clutch lever also actuates a forward drive switch, a reverse drive switch and a brake release switch. A transistor diode logic circuit is connected to the forward and reverse drive switches and includes a selected control relay for each control and a transfer relay. A main selection switch only at the master control selectively energizes one of the control relays to condition the circuit for transfer of control. The transfer relay is controlled by the energization of the control relays and by the logic circuit to permit transfer only if the next selected control is in the same drive condition as the controlling station or in neutral. The master control includes the start switches and must initially be in control with the clutch lever in neutral to start the engines.

Operation can be transferred to a different control only at the master control but the master can retake control at any time subject to limitation of the setting of the clutch levers.

3,692,158

Patent Not Issued For This Number

3,692,159

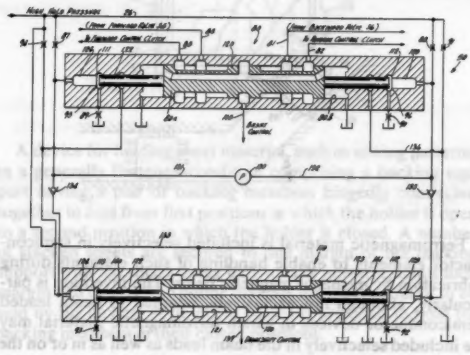
Patent Not Issued For This Number

3,692,160

FLUID POWER CONTROL SYSTEM FOR VEHICLES

Conrad R. Hilpert, Winnebago, Ill., assignor to Turin Disc Incorporated, Racine, Wis.

Filed Aug. 24, 1970, Ser. No. 66,282
Int. Cl. F16d 67/04; F16h 57/06
U.S. Cl. 192—4 C 4 Claims



A fluid power control system for a vehicle having forward, reverse and speed range clutches, and the vehicle being driven from a source of power, such as an internal combustion engine, through a torque converter, which is controlled by a fluid actuated and modulated main clutch. The control system includes inhibitor valve means which functions to inhibit the shifting of the clutches between forward and reverse directions above predetermined vehicle speeds, and also inhibit speed gear shifting in a downward direction above a predetermined speed.

The control system also includes cross-over valve means connected with the direction clutches and the speed change clutches so that when a shift from one clutch to the other is called for by the action of the operator, the clutch which had been engaged is held in engagement until the newly selected clutch is at least partially engaged, and then the clutch which had been engaged is released. This functions to eliminate heat generation which is otherwise caused by slow shifting which in turn permits the vehicle power source to build up inertia energy in the power input parts, such as the flywheels, main clutch and torque converter. The cross-over valve means thus eliminates the heat build up due to the conventional between-gears-neutral position, and the valve means are effective regardless of how slowly the clutches are shifted.

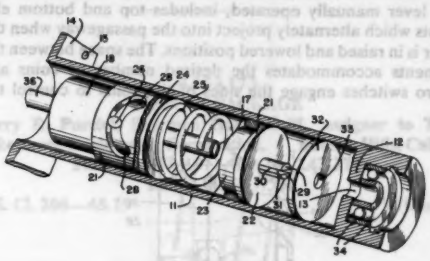
3,692,161

SELF-LOCKING CLUTCH

Roy I. Katsuren, Penfield, N.Y., and Lloyd L. Salisbury, Kensington, Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 14, 1970, Ser. No. 80,653
Int. Cl. F16d 67/00
U.S. Cl. 192—8 R 1 Claim

A self-locking clutch for use in motorized prosthetic devices comprising a spring loaded brake cylinder rotatable by a camming pin extending from the drive means which cams the cylinder away from a friction pad by riding in an arcuate slot in the wall of the cylinder. The cylinder is forced by the spring



to re-engage the friction pad when the motor is deactivated and functions as a back-block to prevent the output from driving the mechanism.

3,692,162

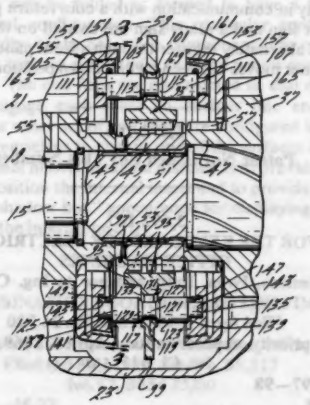
Patent Not Issued For This Number

3,692,163

TRANSMISSION

Thurman O. Ruettinger, R.D. #1 West Lake Rd., Skaneateles, N.Y.

Filed June 1, 1971, Ser. No. 148,772
Int. Cl. F16d 23/02
U.S. Cl. 192—53 F 10 Claims



Manual transmission having clutching and synchronizing assemblies using elongated spring means biasing energizing pins radially outwardly.

3,692,164

Patent Not Issued For This Number

3,692,165

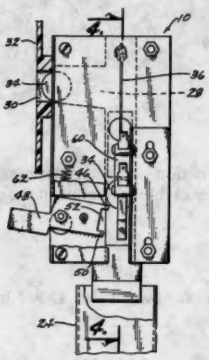
VENDING MACHINE COIN MECHANISM

Martelle J. Syverson, Albert Lea, Minn., assignor to Fountain Industries, Inc., Albert Lea, Minn.

Filed Nov. 25, 1970, Ser. No. 92,710
Int. Cl. G07f 13/10
U.S. Cl. 194—13 15 Claims

A hot drink coin operated vending machine including a dry product which is dispensed in response to the proper coins

being inserted into the coin mechanism. The coin mechanism includes an inlet opening which gauges the thickness, height and flatness of the coin and the passageway through which the coin moves includes an undersized coin reject spring. A control lever manually operated, includes top and bottom elements which alternately project into the passageway when the lever is in raised and lowered positions. The space between the elements accommodates the desired number of coins and micro switches engage the sides of the coins to control the



flow of dry product. Upon release of the coins, the product dispenser is deactivated. A container collects the coins fed through the coin mechanism and upon a predetermined quantity of coins being received corresponding to the number of product servings, the container will move downwardly and deactivate the product dispenser and place the coin passageway in communication with a coin return passageway. A sold out sign and a ready sign are carried on the coin container and alternately register through a front panel window as the container moves between up and down positions.

3,692,166

Patent Not Issued For This Number

3,692,167

KEY FOR THE KEYBOARDS OF ELECTRIC-INPUT OFFICE MACHINES

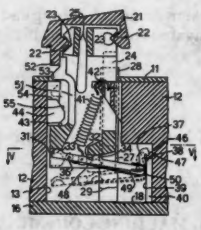
Teresio Gassino, Ivrea, Italy, assignor to Ing. C. Olivetti & C.S.p.A. Ivrea (Turin), Italy

Filed April 1, 1970, Ser. No. 24,720

Claims priority, application Italy, April 4, 1969, 51303 A/69

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **10 Claims**



A key for use in keyboards of electric-input office machines includes a shank for operating a movable electric contact that closes a circuit by touching on a fixed electric contact. The movable electric contact is carried by an insulating plate normally held by a spring to bear against the shank of the key, and is provided with a hook element engaging a fixed shoulder during a first part of the depression stroke of the key to tension the spring. The hook element is released from the shoulder towards the end of the stroke to permit the spring to cause the plate to jump and the movable contact to touch the fixed contact temporarily through inertia, the spring then returning the plate to a position in which the movable contact is separated from the fixed contact.

3,692,168

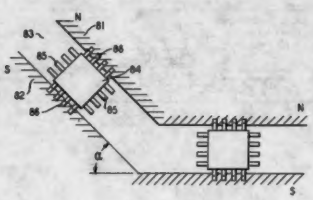
MANIPULATION OF SEMICONDUCTOR ELEMENTS BY MAGNETIC MEANS

Harry E. Hughes, Jr., Reading, Pa.; Jack A. Morton, South Branch, N.J., and Meyer H. Wachs, Reading, Pa., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 792,490, Jan. 21, 1969. This application Sept. 4, 1970, Ser. No. 69,823

Int. Cl. B65g *47/00*

U.S. Cl. 198—41 **2 Claims**



Ferromagnetic material is included selectively in semiconductor elements to enable handling of such elements during fabrication by means of magnetic fields. The invention is particularly, although not exclusively, adapted to beam leaded semiconductor devices in which ferromagnetic material may be included selectively in the beam leads as well as in or on the semiconductor body itself. Magnetic manipulation for a wide variety of purposes is disclosed.

3,692,169

EGG GATHERING MECHANISM

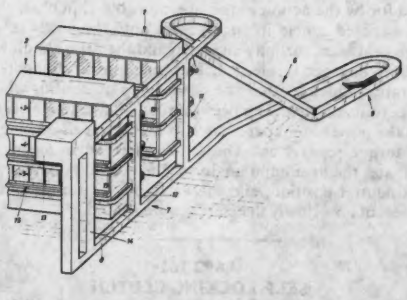
Josef H. Kuhlmann, Horstmarer Strasse 9, 4401 Laer, Germany

Filed Dec. 7, 1970, Ser. No. 95,857

Claims priority, application Germany, Dec. 12, 1969, P 19 62 423.8

Int. Cl. B65g *47/00*

U.S. Cl. 198—43 **10 Claims**



An egg gathering mechanism for multi-level block-nest plants with egg conveyor mechanisms allocated to each level. The conveyor mechanisms feed into drop-tubes which have devices for retarding free-fall at the heads of the blocks as well as additional transport devices for the eggs allocated to the lower end of the drop-tubes. The invention is distinguished by the use of chaff to retard the free-fall of the eggs and by the

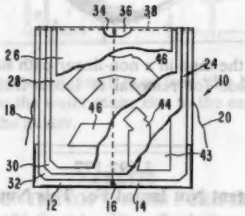
mechanisms provided above and below the drop-tubes for feeding and removing the chaff.

3,692,170

HOLDER FOR SHEET MATERIAL

Henry L. Woodward, Jr., P.O. Box 384, Los Altos, Santa Clara County, Calif.

Filed Dec. 21, 1970, Ser. No. 99,902
Int. Cl. A45c *11/00*
U.S. Cl. 206—1 A **8 Claims**



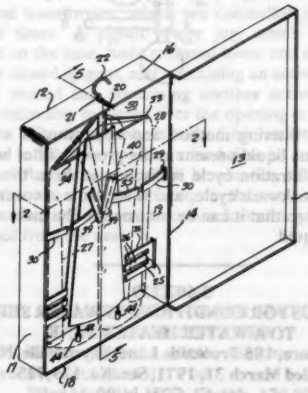
A device for holding sheet material, such as sewing patterns, in a generally flattened condition comprising a backing support having a pair of backing members hingedly connected together to fold from first positions in which the holder is open to a second position in which the holder is closed. A number of stacked sheets are secured to one margin of the backing support with the sheets being individually movable about such margin and disposed to define dividers for sheet material to be held by the device. A tie-down means is provided to hold the backing members in their closed positions.

3,692,171

PROTECTIVE CONTAINER FOR CLOTHING

Timothy Graham, 1811 Jefferson Avenue, Newport News, Va.

Substitute for Ser. No. 433,927, Feb. 19, 1965. This application April 16, 1971, Ser. No. 134,896
Int. Cl. B65d *85/18*
U.S. Cl. 206—7 C **8 Claims**



A protective container for clothing formed as a box having a slot in its top wall to receive the shank of a clothes hanger, inwardly projecting resilient flanges on the lower opposite sidewall portions of the box for engaging the sleeves of a garment, inwardly projecting arms on the sidewalls above the fingers, and plate elements on the inner ends of the arms for supporting engagement beneath the lapels of the garment.

3,692,172

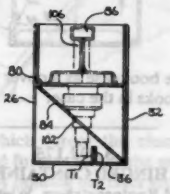
Patent Not Issued For This Number

3,692,173

DISPLAY PACKAGE

Larry R. Purciel, Sherman Oaks, Calif., assignor to Tool Research Engineering Corporation, Beverly Hills, Calif.

Filed May 27, 1971, Ser. No. 147,377
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.19 **14 Claims**



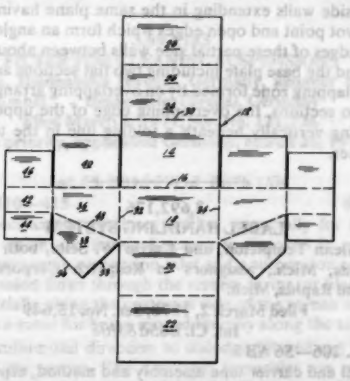
A display package or carton allowing for the mounting and display of hardware items, such as a door handle key lock assembly whereby a separate internal insert serves both as a mounting surface for displaying the item and as a structural member for providing rigidity to the overall package. An external component in the form of an outer box is provided to engage and enclose the internal insert in such a manner as to provide a sturdy package with an attractive "shadow box" appearance. The internal insert is comprised of a planar sheet blank which can be folded or formed to have a triangular cross-sectional configuration. This triangular configuration provides rigidity to the outer box component. The outer box-like member has two side panels, two end panels and two sets of end flaps. The end flaps are constructed so that one set of end flaps engage each other to enclose one end of the package. The other set of end flaps are configured to fold inwardly on themselves to engage one of the surfaces of the triangular internal inserts in such a manner as to provide a physical stop to position the internal insert and to provide an opening with a "shadow box" appearance for displaying the item mounted on the internal insert.

3,692,174

COMBINATION BOOKCASE AND SHIPPING CONTAINER

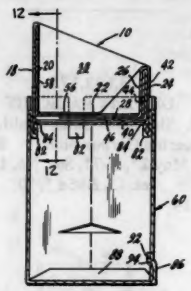
Richard H. Ross, 3605 Greenbrier, Ann Arbor, Mich.

Filed Oct. 30, 1970, Ser. No. 85,517
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.22 **10 Claims**



Paperboard or the like is blanked and formed to provide a

bookcase and a base for supporting the bookcase. The base and bookcase can be separated, and the base can be inverted



and placed over the bookcase as a cover to provide a shipping container for the books in the case.

3,692,175

HINGED CONTAINER

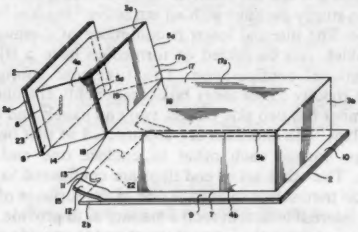
Gisbert Hordler, 34 Rontgenstrasse, Wiesbaden-Biebrich, Germany

Filed May 22, 1970, Ser. No. 39,615

Claims priority, application Germany, May 24, 1969, P 19 26 739.1

Int. Cl. B65d *25/00*

U.S. Cl. 206—45.34 7 Claims



This invention relates to a container, having a cavity which is surrounded on all sides, comprising a hood-like top the walls of which end in outwardly projecting flanges and a base plate to the upper surface of which the top is fastened with the underside of said flanges, the container in the closed condition having end walls and partial side walls extending downwardly from said top and terminating in said outwardly projecting flanges, the pair of partial side walls bordering on the lateral edges of the same end wall extending parallel to each other in the same direction so that the pairs of partial side walls issuing from different end walls meet upon each other, each pair of partial side walls extending in the same plane having a common pivot point and open edges which form an angle with the upper edges of these partial side walls between about 90° and 160°, and the base plate including two flat sections and having an overlapping zone formed by an overlapping arrangement of said two sections, the overlapping edge of the upper section extending vertically beneath a folding line in the top of the container.

3,692,176

LABEL HANDLING SYSTEM

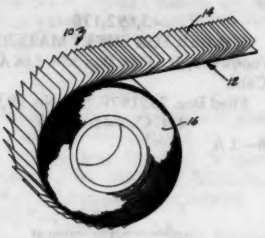
John Glenn Templeton, and Calvin W. Seitz, both of Grand Rapids, Mich., assignors to Rospatch Corporation, Grand Rapids, Mich.

Filed March 2, 1970, Ser. No. 15,649

Int. Cl. B65d *83/08*

U.S. Cl. 206—56 AB 2 Claims

Label and carrier tape assembly and method, especially for center fold type fabric labels, with each label having one end removably adhered to a carrier tape and the opposite free end overlapping the adhered end of the adjacent label, with ad-



vancement of the tape in a non-linear path successively label ends to protrude for removal of labels from the tape and securement.

3,692,177

Patent Not Issued For This Number

3,692,178

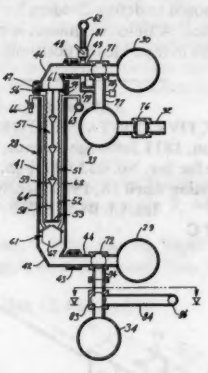
FILTRATION SYSTEM

Thomas L. Reece, Portage, Mich., assignor to Dover Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,986

Int. Cl. B01d *29/38*

U.S. Cl. 210—82 17 Claims



A pressure filtering method and apparatus in which the residual process liquid present in the pressure filter housing at the end of a filtration cycle is discharged from the housing, prior to the backwash cycle, and is sent to a recovery system and is treated so that it can be returned to the main stream of the process liquid.

3,692,179

APPARATUS FOR CONDITIONING WATER SUPPLIED TO A WATER HEATER TANK

Samuel J. Moore, 185 Brookside Lane, Fayetteville, N.Y.

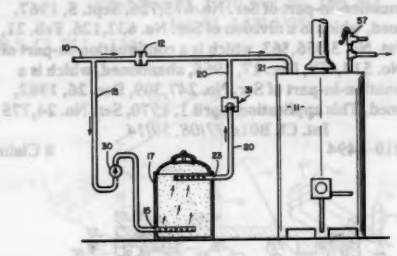
Filed March 31, 1971, Ser. No. 129,725

Int. Cl. C23f *14/00*

U.S. Cl. 210—94 5 Claims

The water supply main is connected to the inlet of the water heater by a supply line including a flow control orifice. A branch conduit line is connected to the supply line upstream from the orifice and extending to the inlet of a tank containing the water conditioning material. There is a second branch line extending from the supply line downstream from the orifice to the outlet of the conditioning tank. A check valve is con-

nected in one or both of the branch conduit lines to prevent back-flow of hot water from the heater through the tank containing the conditioning material. The orifice in the supply line



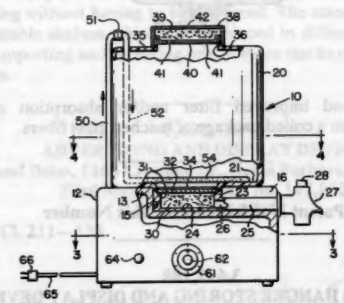
is dimensioned to permit back-flow from the heater through the supply line to the water main, due to the expansion of the heater water in the heater.

3,692,180

COUNTERTOP WATER PURIFIER

Julius LaRaus, 150 Crandon Way, Rochester, N.Y., assignor to Sadye R. LaRaus, Rochester, N.Y.

Filed April 5, 1971, Ser. No. 131,262
Int. Cl. B01d *35/02*
U.S. Cl. 210—139 11 Claims



A small ozone generator (e.g., approximately 1 gr/hr.) is mounted in a portable base or stand together with a small air pump and transformer, which are controlled by a manually operable timer. A plastic water jug, which is removably mounted on the base, has a recessed lower end connected to a normally closed spiggot, and containing an activated-charcoal filter. A vented cap containing another activated charcoal filter is removably mounted over the opening in the top of the container. When the timer is turned on, ozone gas from the generator is fed for a predetermined time to a diffuser in the bottom of the container which breaks the ozone into small bubbles that rise through the water in the container. The charcoal filters remove any excess ozone from the gases and water discharged from the unit.

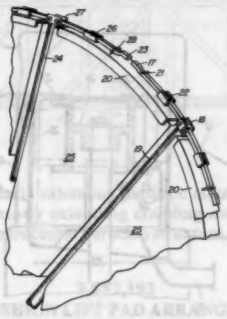
3,692,181

NOVEL CLAMPING DEVICE FOR SECTORS OF A ROTARY DISC FILTER

Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed March 4, 1971, Ser. No. 120,888
Int. Cl. B01d *33/26*
U.S. Cl. 210—331 15 Claims

An improved clamping device for securing a filter sector to the central barrel of a rotary disc filter has been invented. The clamping device features a pair of opposed locking arms each interconnecting at one end to a pair of radial rods extending from said filter barrel. The other ends of the locking arms interconnect with a channel-shaped sector clamp. The upper surface of the channel-shaped sector clamp has a pair of fulcrum blocks for contact with each of the locking arms which when forcibly deflected over the fulcrum block causes an in-



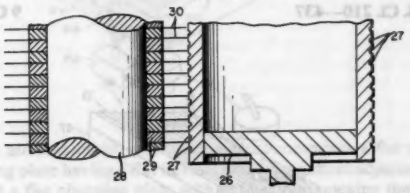
ward radial force which forces the channel-shaped clamp against the sector and further forces the sector in toward the central barrel, thereby holding the filter section firmly in position.

3,692,182

APPARATUS FOR FORMING AND CUTTING FILTER CAKE

Wilbur L. Patton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 16, 1971, Ser. No. 124,699
Int. Cl. B01d *33/02, 33/38*
U.S. Cl. 210—386 5 Claims



Apparatus is described for deliquifying a slurry of particulate material, especially acicular pigments and fillers, to form a continuous, low-moisture, filter cake which is then cut in the longitudinal direction to form pieces suitable for rapid drying. The cutting is effected by passing the filter cake between a pair of rolls, one of which is provided with a series of spaced circular cutting edges.

3,692,183

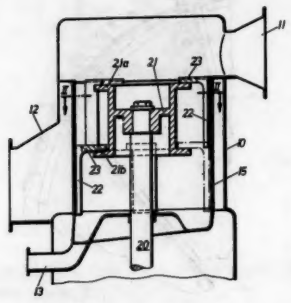
FILTER FOR CLEANING SUSPENSIONS

Josef Tra, Heidenheim (Brenz), Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed March 8, 1971, Ser. No. 121,726
Claims priority, application Germany, March 26, 1970, P 20 14 700.6
Int. Cl. B01d *29/38*; B07b *1/04*
U.S. Cl. 210—415 8 Claims

The specification discloses a filter, especially for suspensions, in which a cylindrical screen is disposed in a closed housing between a suspension inlet and a suspension outlet so the suspension flows through the screen. Strips, or blades, extending axially along the upstream side of the screen are connected to a rotor for being moved thereby along the screen in the circumferential direction to dislodge filtered out impurities from the screen. The dislodged impurities are removed from the housing via an impurity outlet. To prevent the move-

ment of the strips, or blades, along the screen from developing pressure pulsations of an intensity and/or frequency which could interfere with the formation of a web in a paper making



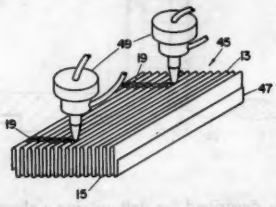
machine supplied by the filter, the strips, or blades, are divided into axial sections which are offset circumferentially relative to each other, while the axial sections at at least one level are non-uniformly circumferentially spaced.

3,692,184

FILTER CARTRIDGE AND PACK THEREFOR AND METHOD OF MAKING SAME

Robert B. Miller, Jr., and Jerry E. Stephenson, both of Lebanon, Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 7, 1970, Ser. No. 79,165
Int. Cl. B01d *27/00*
U.S. Cl. 210—437 9 Claims



An annular filter pack of longitudinally folded filter paper has a plurality of longitudinally spaced bands of adhesive resin disposed around the inside periphery so as to accurately position the inside folds and dimensionally stabilize the filter pack. The filter pack is incorporated into filter cartridges which may be used to filter a variety of fluids.

3,692,185

FILTER PAPER

Peter S. Columbus, Whitestone, N.Y., and Carl R. Erikson, Maywood, N.J., assignors to Borden, Inc., New York, N.Y.

Division of Ser. No. 698,705, Jan. 18, 1968, Pat. No. 3,542,706. This application Nov. 18, 1970, Ser. No. 90,848
Int. Cl. B01d *29/06*
U.S. Cl. 210—493 3 Claims

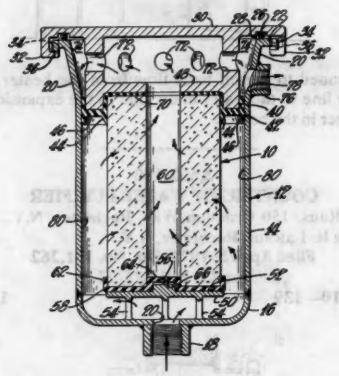
This instant invention relates to a filter paper suitable for use at an elevated temperature using an adhesive composition comprising a heat curable water-based polyvinyl acetate thermosetting resin adhesives comprising, in addition to the resins noted, water-soluble methyl cellulose in an amount sufficient to form a non-elastic continuous film on the adhesive surface when exposed to curing temperatures.

3,692,186

FILTER AND/OR ABSORPTION MEDIA

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of Ser. No. 675,726, Sept. 5, 1967, abandoned, which is a division of Ser. No. 632,126, Feb. 21, 1967, Pat. No. 3,356,563, which is a continuation-in-part of Ser. No. 514,458, Dec. 17, 1965, abandoned, which is a continuation-in-part of Ser. No. 247,309, Dec. 26, 1962, abandoned. This application April 1, 1970, Ser. No. 24,775
Int. Cl. B01d *27/08, 39/14*
U.S. Cl. 210—494 4 Claims



A new and improved filter and/or absorption media prepared from a coiled package of leached glass fibers.

3,692,187

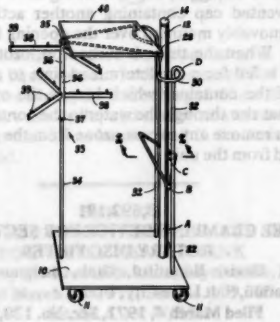
Patent Not Issued For This Number

3,692,188

CLOTHES HANGER STORING AND DISPLAY DEVICE

Jimmy O. Bayne, Route 1, Simpsonville, S.C.

Filed Aug. 28, 1970, Ser. No. 67,749
Int. Cl. A47f *7/00*
U.S. Cl. 211—49 D 4 Claims



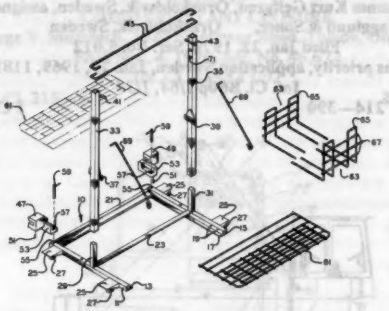
A stand for storing and displaying clothes hangers including a vertical standard which has a spring supported bracket therein, that supports a rack upon which clothes hangers are stacked. As the weight of the stack of clothes hangers varies the vertical position of the rack varies accordingly so that the hangers can be loaded from a convenient position.

3,692,189

PACK HOLDER-REFOLD STAND

Norman H. Preston, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 21, 1970, Ser. No. 100,214
Int. Cl. A47f 5/08
U.S. Cl. 211—134 1 Claim



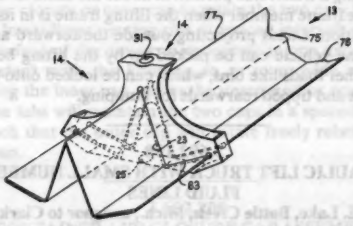
An easily moveable and adjustable stand for supporting a supply of continuous forms for processing in a business machine and for receiving, refolding and supporting processed continuous forms emerging from the machine. The stand can be pivotally attached to the machine for rapid loading and unloading without having to be realigned. The stand has several adjustable shelves which can be placed in different positions for supporting and receiving one or more stacks of continuous forms.

3,692,190

ADVERTISING AND DISPLAY DEVICE

Michael Dolas, 1164 Crestline Dr., Santa Barbara, Calif.

Filed May 28, 1971, Ser. No. 147,832
Int. Cl. A47f 5/00
U.S. Cl. 211—135 8 Claims



Display device of folded, die-cut paperboard construction having base members, poles supported thereby, shelf members supported by poles with up-tilted shelves, and brace members straddling shelf members and bracing same, the poles extending through junctions of shelf members and brace members. Also, pole support of die-cut paperboard construction with bottom and a plurality of foldable side members with overlapping tongues penetrated by a pole resting on bottom.

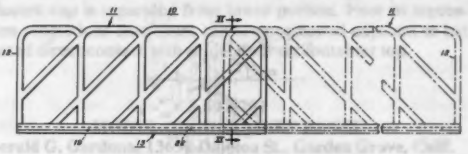
3,692,191

EXTENDIBLE AND RETRACTABLE PARTITION ASSEMBLY FOR DISPLAY SHELVING

David M. Moore, 960 Harden Drive, Pittsburgh, Pa.

Filed Nov. 2, 1970, Ser. No. 86,031
Int. Cl. A47b 96/04; A47f 3/00, 5/10
U.S. Cl. 211—184 11 Claims

An extendible and retractable partition assembly for display shelving is detailed. The partition structure is more particularly a binning and banding partition for use with shelving and counter tops for segregating displayed merchandise. Identically formed linearly extending partition members are slidably connected to linearly extending coupling means to form the extendible and retractable partition structure.

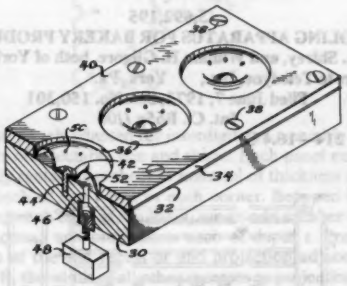


3,692,192

AIR CUSHION LIFT PAD ARRANGEMENT

Roman Baldur, Montreal, Canada, assignor to Borg-Warner (Canada) Limited, Oakville, Ontario, Canada

Filed June 18, 1971, Ser. No. 154,380
Int. Cl. B60v 1/00
U.S. Cl. 214—1 BE 6 Claims



An air cushion lift pad arrangement comprises a flat supporting plate having a flat flexible diaphragm sheet adjacent to it and a flat clamping plate with at least one opening therein adjacent to the diaphragm and fixed to the supporting plate. The diaphragm is also fixed centrally of the opening to the supporting plate and means are provided to introduce pressurized air into the interface between the supporting plate and the diaphragm in the uncovered area. There are perforations in the diaphragm to permit the passage of air so as to transmit a force between the inflated diaphragm and a flat surface adjacent to it.

3,692,193

Patent Not Issued For This Number

3,692,194

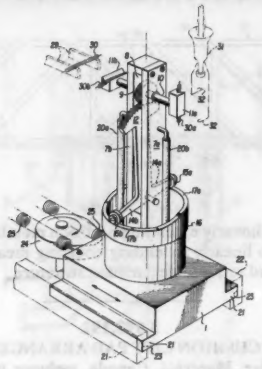
AUTOMATIC LAMP FILAMENT-TRANSFERRING EQUIPMENT

Tatsuro Uchiumi, Kanagawa, and Goro Nakano, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan

Filed July 16, 1971, Ser. No. 163,391
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BH 10 Claims

An automatic lamp filament-transferring equipment is provided with one shaft having chucks fixed on opposite ends thereof, each having a face oriented at right angles relative to the other, the shaft performing a revolution in a plane containing the shaft and being rotatable about the shaft axis. The

equipment, when installed in a conveyor system of an automatic mounting machine, is especially useful for manufactur-



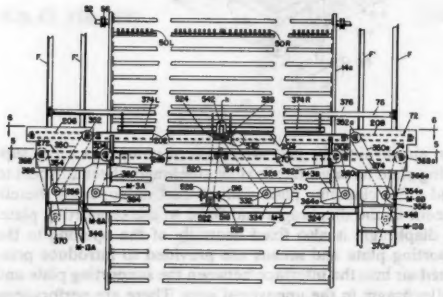
ing a lamp holding a filament mounted in parallel with the lamp axis.

3,692,195

COOLING APPARATUS FOR BAKERY PRODUCTS

Carey L. Shirey, and William H. Gilgore, both of York, Pa., assignors to Teledyne, Inc., York, Pa.

Filed June 7, 1971, Ser. No. 150,301
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 C **10 Claims**



An article treating apparatus for use, for example, in cooling hot depanned loaves of bread wherein rows of hot loaves are supported on successive shelves movable by conducting means in a closed loop through a cooling zone from a loading station to an unloading station. A pair of end to end related transversely extending endless intermittently and simultaneously operated loading conveyors introduce into the loading station from opposite sides of the cooler a half shelf-width row of hot bread loaves in position to be loaded as a full shelf-width row by a common pusher from the pair of loading conveyors onto successive shelves. A pair of end to end related transversely extending endless intermittently and simultaneously operated unloading conveyors discharge from the unloading station to opposite sides of the cooler, each being arranged to receive a half of the full shelf-width row of cooled loaves pushed by a common pusher from successive shelves onto the pair of unloading conveyors. Shelf grids are fashioned to cooperate with the loaf loading and unloading means to provide guide means minimizing dislocation and jamming of loaves during transfer from the loading conveyors onto the shelves and transfer from the shelves to the unloading conveyors.

3,692,196

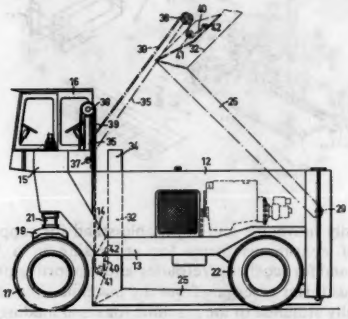
Patent Not Issued For This Number

3,692,197

TRANSPORT VEHICLE

Erik Hannes Kurt Gelfgren, Ornskoldsvik, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Jan. 22, 1970, Ser. No. 5,012
Claims priority, application Sweden, Jan. 29, 1969, 1181/69
Int. Cl. B60p *1/64*, *1/34*
U.S. Cl. 214—390 **1 Claim**



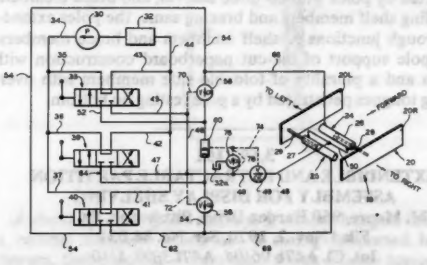
The invention concerns a vehicle for the transport of heavy objects or loads and combines in itself the properties of the known U-frame trucks and the straddle carriers. The vehicle has a frame comprising two vertical frame sides connnected at their upper forward ends by a transverse frame member, preferably supporting the driver's cabin. A lifting frame capable of being hoisted and lowered parallel with itself and to be tilted about its rear ends is formed of two longitudinal parallel lifting beams supporting the load, which lifting beams are pivotally mounted in a vertical guide of the frame at their rear ends and connected with each other at their forward ends by a yoke having a transverse portion at about the same level as the transverse frame member when the lifting frame is in its lowermost position. Loads projecting outside the forward and rear ends of the vehicle can be picked up by the lifting beams as well as other loads like bins, which can be locked onto the lifting beams and tipped rearwards for dumping.

3,692,198

HYDRAULIC LIFT TRUCK WITH SMALL NUMBER OF FLUID LINES

Edward E. Lake, Battle Creek, Mich., assignor to Clark Equipment Company

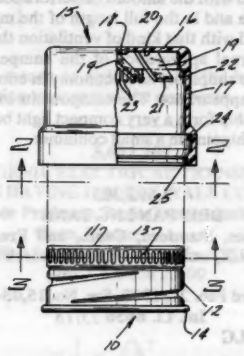
Filed Dec. 28, 1970, Ser. No. 101,547
Int. Cl. B66f *9/18*
U.S. Cl. 214—653 **7 Claims**



A lift truck of the type including a vehicle component having a mast, and a clamp on the mast having clamp arms for

gripping a load and moving it laterally as well as lifting it, including as few as three fluid lines to the clamp, for individually moving the arms laterally in clamping and releasing directions, and shifting both together laterally in each direction, and three manually operable control valves for effecting those movements.

3,692,199
CHILD RESISTANT CLOSURE
George V. Mumford, 3920 Estateway Road, Toledo, Ohio
Filed Nov. 4, 1970, Ser. No. 86,672
Int. Cl. B65d *43/02*
U.S. Cl. 215—9 2 Claims



A two-piece closure in which the inner closure member is formed of metal and composed of a circular top panel with integrally formed depending cylindrical skirt. The skirt is provided with the usual threads for attachment to the finish of a container. The lower end or edge of the skirt terminates in a rolled head or wire. The skirt portion just below the top panel is formed with knurling. A plastic overcap, having integrally formed, downwardly projecting spring members, is formed with a depending skirt which is adapted to enclose the metal inner closure. A bead is formed at the bottom of the skirt of the outer closure or covercap to retain the two caps loosely as a unit. Inwardly projecting ribs at spaced intervals about the inner surface of the covercap cooperate in one axial position to interlock with the knurling so as to provide means for removing the inner cap and in the unstressed or normal position, the tabs will maintain the two caps in a spaced relationship such that the outer cap will rotate freely relative to the inner cap.

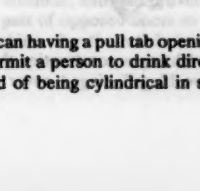
3,692,200
CONTAINER AND CLOSURE CAP ASSEMBLY
Hermann Ritzenhoff, An der Schaferbuche 14, (D-355) Marburg, Lahn, Germany, assignor to Gebruder Seidel KG
Filed Oct. 27, 1970, Ser. No. 84,346
Claims priority, application Germany, Nov. 11, 1969, P 19 56 586.7
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 2 Claims

Container and closure cap assembly comprises container with open top portion and closure cap for sealing top portion of container. Closure cap has lower portion secured to top portion of container and upper portion separated from lower portion by weakened line of connection. Upper portion of closure cap after separation from lower portion thereof serves as removable closure for container top. Projections on upper portion of closure cap and exterior of container top cooperate with each other to seal container top after upper portion of closure cap is separated from lower portion. Prior to separation projections on closure cap are positioned adjacent to but out of direct contact with projections on container top.

3,692,201
MODULAR CONTAINER PANEL
Gerald G. Garduna, 13691 Dawson St., Garden Grove, Calif.
Filed Sept. 23, 1970, Ser. No. 74,753
Int. Cl. B65d *9/34, 9/12*
U.S. Cl. 217—12 14 Claims

Modular panels adapted for interdigitated assembly to form containers of selectable size and shape. Each panel comprises a generally rectangular sheet of material of thickness *t*, with a square notch of size *t* by *t* in each corner. Between the corners, along each edge of the panel, are an odd number of alternating recesses and projections each of depth *t*. Preferably, the width of the end recess or end projection adjacent each corner is B, the width of all other recesses or projections being $A = 2B + t$. A container may be assembled by inserting the projections of one panel within the recesses of one or more adjacent panels. Because of its unique configuration, any panel or combination of panels may be used interchangeably as top, bottom, side or end of the container.

3,692,202
BEER CAN STEIN WITH ATTACHED HANDLE
Thomas J. Parlagreco, 5 Ferris Court, Ho-Ho-Kus, N.J.
Filed Jan. 15, 1971, Ser. No. 106,694
Int. Cl. B65d *25/28*
U.S. Cl. 220—1 BC 1 Claim



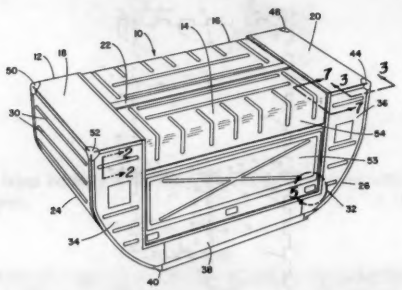
A metal beer can having a pull tab opening on the upper end thereof so to permit a person to drink directly therefrom, the beer can instead of being cylindrical in shape being slightly

tapered upwardly so to resemble the configuration of a beer stein, and the outer side of the can having a flat strap placed adjacent thereto, the center of the strap being able to be pulled away from the can so to form a convenient handle for being held in the hand while drinking.

3,692,203
CARGO CONTAINER FOR AIRCRAFT

Chester L. Byrd, and Randal L. Blackwell, both of Tulsa, Okla., assignors to Air Cargo Equipment Corp., Tulsa, Okla.

Filed May 3, 1971, Ser. No. 139,771
Int. Cl. B65d *8/14*
U.S. Cl. 220—1.5 **12 Claims**

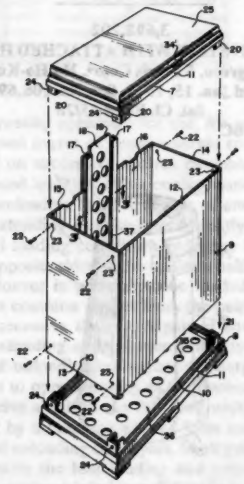


A cargo container of lightweight material particularly designed and constructed for the carrying of luggage and the like in the lower portion or belly cargo compartment of commercial aircraft. The construction is largely of replaceable and interchangeable panels which are easily formed and particularly adaptable to the normal air freight environment.

3,692,204
KNOCK-DOWN HAMPERS

Mike A. Provi, and Vytant Aleks, both of Rockford, Ill., assignors to The Brearley Company, Rockford, Ill.

Filed June 28, 1971, Ser. No. 147,861
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 R **12 Claims**

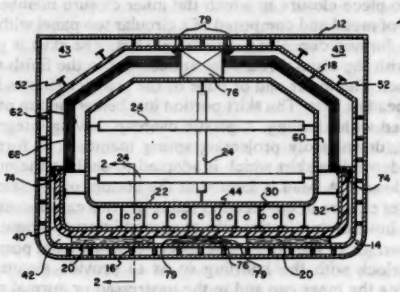


In this knock-down hamper construction the molded plastic top frame with "live hinge" hinged cover and the molded plastic bottom frame or base are both recessed annularly to accommodate the upper and lower edge portions of a one-piece body of solid paperboard sheet material that is unfolded from its compact folded form to define a front wall, two opposed end walls, and two inwardly extending rear wall potions, the vertical edges of which are received in channels defined in the opposed vertical edge portions of a perforated one-piece molded upright connecting panel that fits at its upper and lower ends in the aforesaid recesses in the top and bottom parts. Pressed-in molded plastic fastener pins entered in holes provided in the unfolded one-piece body panel and registering holes provided in upright corner projections on the top and bottom frames serve to fasten the assembled components together into a rigid sturdy hamper. Good ventilation of the hamper is assured with the amount of perforations provided in the bottom frame and in the full length of the middle panel in the back wall and with that kind of ventilation these is nothing to mar the external appearance of the hamper as a whole, which despite the simplicity and economy in construction is of pleasing overall appearance. The components in disassembled stacked relationship form a very compact light bundle adapted for economical shipping in a small container.

3,692,205
DRIP PAN LNG TANK

Walter C. Cowles, Stamford, Conn., and Frank J. Iarossi, Middletown, N.J., assignors to Esso Research and Engineering Company

Filed Feb. 27, 1970, Ser. No. 15,054
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG **10 Claims**



A container tank useful in the transportation of liquified gases at cryogenic temperatures in a tanker vessel comprises a primary liquid-tight barrier and a secondary liquid-tight barrier spaced apart from and surrounding the primary barrier and including a lower drip pan portion which is structurally integrated with the primary barrier and an upper splash shield portion which is structurally independent of but may be mechanically fastened to the primary barrier, i.e., the splash shield may be supported by the primary barrier but not structurally integral with said primary barrier.

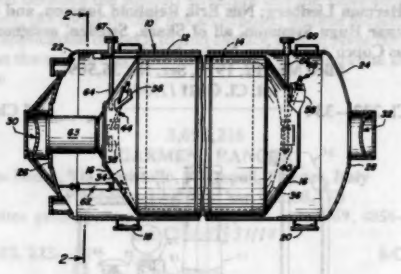
3,692,206
SUSPENSION SYSTEM FOR MULTI-WALLED CONTAINERS

Clarence J. Hornbeck, Wescosville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sept. 2, 1969, Ser. No. 854,364
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 **3 Claims**

Disclosed is a system for suspending the inner vessel of multi-walled containers such as used for storing cryogenic fluids. The suspension system is characterized in that elongate members are used to hold the inner vessel in pure tension so

that the inner vessel can expand or contract without changing the load on any of the support members. There is also pro-



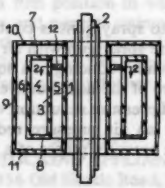
vided locking means to rigidly secure the inner vessel from movement during transport of the container.

3,692,207

CRYOGENIC ELECTRICAL TRANSFORMER APPARATUS HAVING DOUBLE WALL CONSTRUCTION

Henri Vayson de Pradenne, Paris, France, assignor to Alsthom-Savoisienne, Ouen, France

Filed Sept. 4, 1969, Ser. No. 855,316
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 **12 Claims**



To prevent excessive deformation upon short circuit or other stresses tending to push spaced walls together, while avoiding heat loss by conduction, spacer members having teeth facing an opposed wall are applied to one wall, some of the teeth being recessed by 0.1 to 1 mm from the facing wall so that contact obtains only upon deformation. A suitable material for spacers is epoxy bonded fiber glass.

3,692,208

CLOSURE FOR OPEN-MOUTHED CONTAINERS OR TUBULAR VESSELS

Jack V. Croyle, Woonsocket, and James B. Swett, Barrington, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 48,404
Int. Cl. B65d *39/12*
U.S. Cl. 220—24.5 **4 Claims**

A closure suitable for insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a central wall having a toroidally shaped annular portion that is joined to a substantially planar center portion and sealing member, which annular portion peculiarly adapts it for placement upon the tubular member by the application of pressure to the approximate center of the central wall.

3,692,209

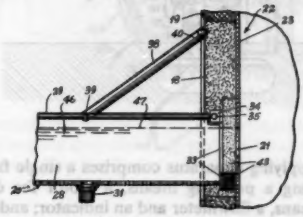
Patent Not Issued For This Number

3,692,210

ATTACHMENT FOR QUICK CHANGE OF IMMERSION HEATING ELEMENTS IN ELECTRIC HOT WATER HEATERS

Jerome G. Schmidt, Route 2, Imperial, Mo.

Filed April 13, 1970, Ser. No. 27,960
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 **7 Claims**



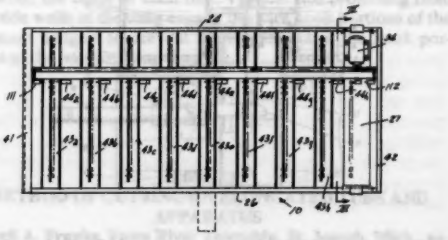
The present novel method of removing and replacing the electric element of an electric hot water heater without draining the water comprises closing the cold water to and the hot water lines from the heater, mounting a water receiving device against the water tank adjacent to the plate supporting the electric element in the water tank, loosening the plate and permitting free water to run into the device, removing and replacing the element, and disposing of the free water. The present novel basket device for receiving free water includes an open-ended basin with controlled drain, and means for removably mounting the basket device about the electric element supporting plate secured to the water tank.

3,692,211

VENDING MACHINE WITH CARRIAGE DRIVE SELECTOR

Charles H. Flubacker, 524 South Harvard Avenue, Arlington Heights, Ill.

Filed May 17, 1971, Ser. No. 143,924
Int. Cl. G07f *11/64*
U.S. Cl. 221—9 **16 Claims**

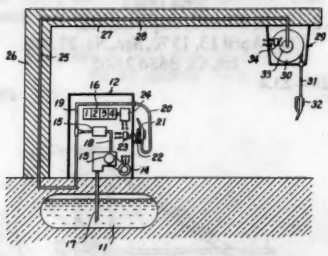


An improved vending machine for dispensing a large number of items and which includes improved article supporting and delivering features and incorporates a photocell detecting circuit for detecting when an article has been dispensed by the machine, and also provides an escrow structure which has a pair of opposed doors so as to direct money placed in the machine after the article has been dispensed or to return the money to the operator if a return button is pressed.

3,692,212
FUEL SUPPLYING APPARATUS

Yoshihiko Irie; Shunro Yamawaki, and Yukio Ogawa, all of Tokyo, Japan, assignors to Tokico Ltd., Kawasaki-City, Kanagawa-ken and Tokico Yuki Ltd., Tokyo, Japan

Filed June 7, 1971, Ser. No. 149,202
Int. Cl. B67d 5/26
U.S. Cl. 222—32 7 Claims

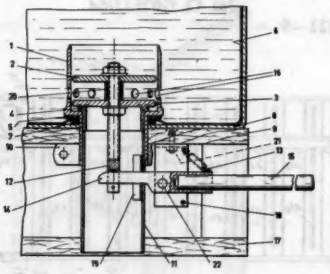


A fuel supplying apparatus comprises a single fuel feeding port including a pumping means, a motor for driving the pumping means, a flowmeter and an indicator; and a plurality of fuel supplying parts which are fed the fuel through the flowmeter from the fuel feeding part. The fuel supplying apparatus further comprises an interlocking device actuating to stop the motor for driving the pumping means, when one fuel supplying part is operated to start the fuel supplying while other fuel supplying part is supplying the fuel, thereby to interrupt the fuel supplying and prevent the fuel supplying to be performed simultaneously at two or more fuel supplying parts.

3,692,213
CONTAINER OF THE THROW-AWAY TYPE PROVIDED WITH A DRAINING DEVICE

Dirk Alta, Beethovenstraat 340, and Derk Dille Doornbos, Mahlerstraat 12, both of Zutphen, Netherlands

Filed May 28, 1971, Ser. No. 148,000
Claims priority, application Netherlands, June 3, 1970, 7008018
Int. Cl. B67d 35/56
U.S. Cl. 222—105 2 Claims

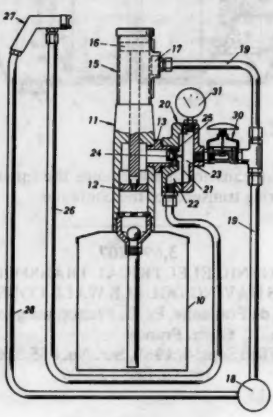


A container of the throw-away type having a draining device comprising a tubular housing in which a valve for closing or opening draining apertures in the housing is movable by means of a lift mechanism operable through the outlet of the housing. The housing outlet extends outwardly through the container wall and has a shoulder for clamping it to said wall. The container may be secured with its bottom to a pallet, the housing outlet shoulder then being clamped at the same time to the pallet and a rod for operating the lift mechanism being then pivoted to the pallet.

3,692,214
METHOD AND MEANS FOR CONTROLLING THE DELIVERY OF LIQUID TO SPRAY GUNS

Kurt Herman Liedberg; Nils Erik Reinhold Jonsson, and Sten Gunnar Hugo Svensson, all of Skara, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 12, 1970, Ser. No. 36,509
Int. Cl. G01f 11/00
U.S. Cl. 222—334 5 Claims

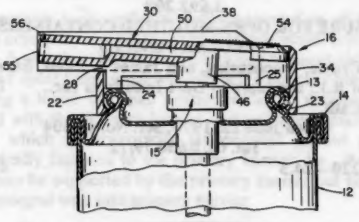


Delivery of liquid to spray guns is controlled by supplying the pump motor of the spray gun with air under substantially unchanged pressure while reducing in a liquid pressure reduction valve the pressure of the liquid delivered from the pump, and loading the liquid pressure reduction valve by selective air pressure taken from an air pressure reduction valve. Both positive and negative pressure pulses of a reciprocating pump are suppressed.

3,692,215
ASSEMBLY FOR CONTROLLING DISCHARGE OF MATERIAL FROM A PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, 6 Altamont Avenue, Saugus, Mass.

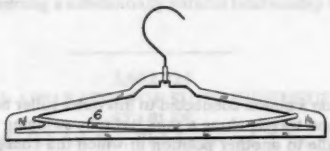
Filed Nov. 3, 1970, Ser. No. 86,469
Int. Cl. B65d 83/14
U.S. Cl. 222—402.13 21 Claims



An actuator cap for a material dispensing package having a material container and a valve structure including a delivery passage for delivering material from the container; the actuator cap comprises an annular wall surrounding the valve structure and securing the cap to the container, and a spout including a discharge passage which spans the annular wall, extends past the cylindrical plane defined by the outer surface of that wall and secured to the valve structure with discharge passage of the spout in communication with the delivery passage of the valve structure, and supporting structure for the spout; the supporting structure is secured to the cap, and also extends

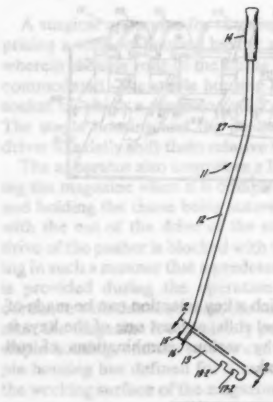
past the aforesaid cylindrical plane; the spout is joined to the supporting structure at its outlet end and is otherwise unsupported between the support structure and the valve structure; second, the spout further has an exposed surface located such that application of force to that surface acts to pivot the spout about the supporting structure thereby to operate the tubular valve.

3,692,216
GARMENT HANGER
Dante Becca, Via Bonistallo, 3, Empoli, Firenze, Italy
Filed Nov. 12, 1970, Ser. No. 88,573
Claims priority, application Italy, Nov. 12, 1969, 4856-A/69
Int. Cl. A47j *51/14*
U.S. Cl. 223—91 **6 Claims**



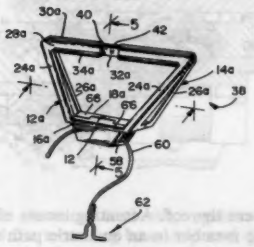
A garment hanger comprises a frame of triangular form with inclined arms connected by a hanger bar. The frame is internally open and supports a flexed rod in the opening which is movable between a first position in which the rod is disengaged from the bar and permits unimpeded placement of a garment folded on the bar and a second position in which the bar can be manually pushed into engagement with the garment to clamp the same against the bar.

3,692,217
STOCKING APPLIANCE
Edward I. Smith, 1316 Old Skokie Road, Highland Park, Ill.
Filed Dec. 18, 1970, Ser. No. 99,456
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 **6 Claims**



A therapeutic appliance, for placing a stocking on the foot of a user, comprising a shaft having a stocking retaining yoke on its lower end. The yoke has at least one pair of complementary side tabs which together with a rear hook attached to the lower end of the shaft form a triangular fixture for retaining the stocking. The shaft of the appliance preferably is curved to incline the upward end of the shaft to a vertical position to enable the user to grasp the appliance at the normally extended position of his arm.

3,692,218
ARTICLE CARRIER WITH LOCKABLE CARRYING HANDLES
Ira J. Friedman, 8 Whittier Place, Boston, Mass.
Filed Oct. 7, 1970, Ser. No. 78,785
Int. Cl. B65d *71/00*
U.S. Cl. 224—45 T **21 Claims**



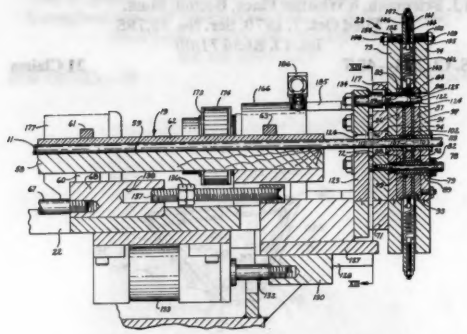
Two molded plastic handle bails having a pair of spaced generally upright legs joined by a horizontal reach are utilized to hand carry articles with the user's hand being placed between the legs and his fingers grasping the reaches. The bails are locked in adjacent juxtaposed position to prevent inadvertent removal of articles. To lock the bails, a snap flange extends transversely from the lower edges of one reach toward and beyond the other reach. The flange terminates with an upwardly extending bead which snappingly engages the exterior face of the other reach adjacent the lower edge thereof. In one embodiment, the bails are secured at their lower ends to the side panels of a plastic tote bag.

In another embodiment, two bails are molded in one piece with their lower ends secured to a channel adapted to captively retain garment hanger hooks to thereby carry articles on garment hangers. A pair of spaced ribs extend upwardly from the channel base and transversely between side walls of the channel. A pair of cantilever flanges extend inwardly toward one another from opposed faces of the bails adjacent the lower end of the bail legs. The wire hook portions of garment hangers are forced against the ribs by the cantilever flanges when the reaches are brought together. A further embodiment includes a garment hanger hook receiving sling molded between the bases of each bail. Vertical ribs projecting from the side walls of the sling engage the wire hook portions of the garment hangers to prevent disengagement of the hook portions of the hangers from the sling.

3,692,219
METHOD OF CUTTING AN ELONGATED TUBE AND APPARATUS
Newell A. Franks, Fawn River Township, St. Joseph, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.
Division of Ser. No. 778,611, Nov. 25, 1968, Pat. No. 3,568,488. This application Oct. 22, 1970, Ser. No. 83,248
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **7 Claims**

A machine having means for guiding and intermittently advancing an elongated, tubular element a predetermined distance along a path, and for gripping two spaced portions of said element and separating them following each advancement thereof. A cutting device on the machine includes an an-

nular cutting member with a radially inner cutting edge through which the element is slideably received during said



advancement thereof. Actuating means effects movement of the cutting member in an eccentric path around the tubular element whereby the cutting operation is performed.

3,692,220

DEVICE FOR BREAKING VIALS

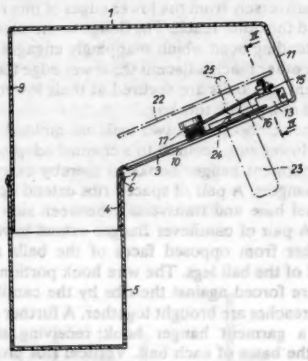
Gunther Seng, Lenzhalde 71, 7, Stuttgart, Germany

Filed April 20, 1971, Ser. No. 135,736

Claims priority, application Germany, Apr. 20, 1970, P 20 18 844.7

Int. Cl. B26f 3/00

U.S. Cl. 225—96.5 **6 Claims**



In a device for breaking vials there is provided a sloping plate having a slot and carrying a pivotable file urged by a spring into an inoperative position in which it partially overlaps said slot. The vial is inserted into the slot and slid therealong whereby the vial neck is scored by the resiliently yielding file. The vial head is broken off along the score by pivoting the vial normal to its preceding direction of travel and pressing the vial head against a breaking strip affixed inside said housing adjacent said slot.

3,692,221

EDGE CONTROL APPARATUS FOR SHEET MATERIAL

Arthur Kinder Haslehurst, Northworthy, Louvain Rd., Derby, England

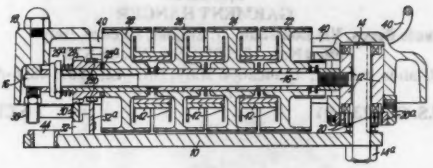
Filed July 30, 1971, Ser. No. 167,724

Claims priority, application Great Britain, Aug. 6, 1970, 37,904/70; Nov. 10, 1970, 53,365/70

Int. Cl. B65h 25/06

U.S. Cl. 226—23 **9 Claims**

An edge control apparatus for sheet material whereby the edge of the material is maintained in or close to a given line, comprises a spindle carrying at least two rollers, the spindle being mounted in a pivotal manner so that the axis of rotation of the rollers changes when the spindle is moved about its pivot, the spindle being pre-loaded to a position in which its angle is such that sheet material moving in contact with an inner roller tends to be urged outwardly, so that its edge moves across eventually on to an adjoining outer roller,



whereupon a pinion connected to this outer roller begins to be rotated and travels along a rack, thereby swinging the rollers and spindle to another position in which the changed axis of rotation of the rollers now tends to urge the edge of the sheet material inwards again, so that the flow of the sheet material is maintained close to a datum line at the adjoining edges of the said two rollers.

3,692,222

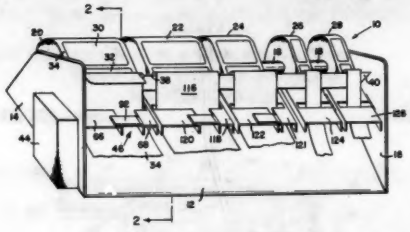
MULTIPLE LABEL DISPENSER

Fred H. Pargeon, Wayne, Pa., assignor to Globe Ticket Company, Philadelphia, Pa.

Filed July 12, 1971, Ser. No. 161,783

Int. Cl. B65h 17/22

U.S. Cl. 226—110 **7 Claims**



In a label dispenser in which a key selection can be made of any one of a plurality of label rolls, at least one of the keys is adjustable in width whereby various combinations of roll widths can be accommodated.

3,692,223

ADJUSTABLE GUIDE FOR A MOVING SHEET

Roger E. Laigle, Torrington, and Antone F. Rakich, Waterbury, both of Conn., assignors to Anaconda American Brass Company

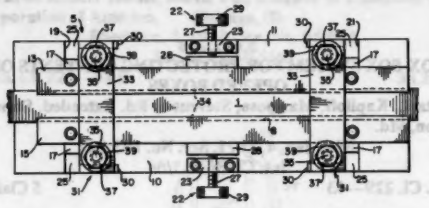
Filed Dec. 18, 1970, Ser. No. 99,630

Int. Cl. B65h 23/04

U.S. Cl. 226—199 **4 Claims**

A device for guiding a metal sheet or strip during its movement in which the sheet is maintained in a slot which is formed

by a stationary plate and two adjustable notched guide bars. At least one of the bars is movable toward and away from another bar using a fine-adjustment moving arrangement, while maintaining a substantially parallel relationship between the bars.

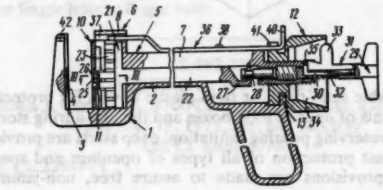


3,692,224

SURGICAL APPARATUS FOR SUTURING TISSUE WITH STAPLES

Georgy Vasilievich Astaflev, Rizhsky proezd, 7, kv. 108; Ivan Alexandrovich Korolkov, Polyarnaya ulitsa, 52, korpus 2, kv. 174, and Anatoly Nikolaevich Ozhgikhin, Oktyabrskaya ulitsa, 60, korpus 2, kv. 20, all of Moscow, U.S.S.R.

Filed Oct. 15, 1970, Ser. No. 80,934
Int. Cl. B25c *5/02*
U.S. Cl. 227—19 **3 Claims**



A surgical apparatus for suturing tissues with staples, comprising a support housing having an open longitudinal cavity wherein slidable rods of the staple housing and pusher are accommodated. The staple housing has a head provided with a socket in which a magazine with staples is entirely inserted. The staple housing and the pusher are provided with screw drives to axially shift them relative to the support housing.

The apparatus also comprises a limit strip capable of retaining the magazine when it is completely pushed into the socket and holding the tissue being sutured. The limit strip interacts with the nut of the drive of the staple housing, whereby the drive of the pusher is blocked with the drive of the staple housing in such a manner that a predetermined sequence of actions is provided during the operation of the apparatus. In accordance with this sequence, the staple housing can move only after the magazine is completely pushed into the socket of the staple housing, and the pusher can displace only after the staple housing has defined for a maximal suturing gap between the working surface of the magazine and the die.

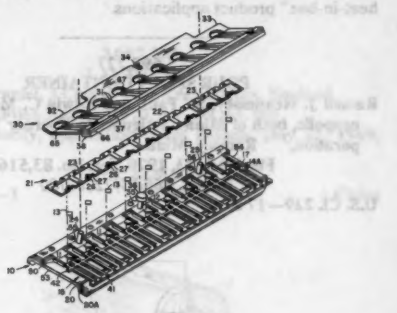
3,692,225

SEMICONDUCTOR DEVICE FABRICATION APPARATUS

Milan L. Lincoln, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 732,772, May 28, 1968, abandoned. This application Sept. 9, 1970, Ser. No. 69,422
Int. Cl. B23k *11/00, 37/04*
U.S. Cl. 228—4 **21 Claims**

A jigging tool and method for simultaneously bonding a plurality of semiconductor dice on a corresponding plurality of mounting bases and to a plurality of electrical leads in strip form while accurately maintaining such plural structures in a fixed position. Pivoted weight means are disposed on a jigging tool for forcing the electrical lead strip against the corresponding dice and the mounting base strip and the tool is mounted at an angle such that gravity forces the dice and the lead strip into an indexed relationship. The same indexing means in the form of posts or studs is used to locate the lead strip and the weight means which engages the lead strip to provide alignment between those structures. Rigid teeth-type aligning means in the jigging tool align the mounting portions of the mounting bases such that each such portion and each semiconductor die has the same respective relationship throughout the mounting base strip. The dice and lead strip are simultaneously soldered or otherwise bonded to the mounting portion, and at the same time portions of the lead strip are soldered or otherwise secured to contact portions on the dice. This simultaneous soldering is accomplished in the small mass of the tool such that the thermal inertia in the tool and maintained structures is minimized. A low profile in the tool provides ease of usage and handling. The lead strip is novel in that it has stable yet independently flexible contact portions for securing to the contact portions on the dice.

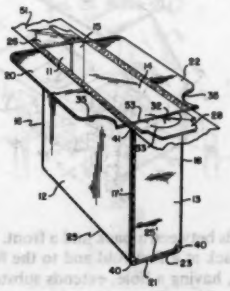


3,692,226

REMOVABLE SIDE WALL FOR TIGHTLY SEALED DRUMHEAD CARTONS

Chauncey Young, and William H. Watson, both of St. Louis, Mo., assignors to Riegel Paper Corporation, New York, N.Y.

Filed June 11, 1970, Ser. No. 45,507
Int. Cl. B65d *5/54, 5/08*
U.S. Cl. 229—17 R **6 Claims**



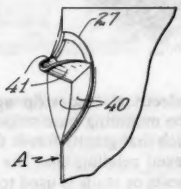
An improved opening arrangement for dispensing the contents of a hermetically sealed drumhead carton is disclosed herein. A totally removable side wall panel is included in the carton, and its removal is facilitated by an integral lift tab formed in a contiguous dust flap in the end closing structure.

The lift tab is arranged and pre-cut so that it may be readily grasped and removed along with the side wall panel to provide an open sided carton, without disturbing either of the drumheads, for "eat-from-box;" "mix-in-box;" "grow-in-box;" "-heat-in-box" product applications.

3,692,227
POUR SPOUT CONTAINER

Russell J. Hennessey, St. Paul, and Edwin C. McLaren, Minneapolis, both of Minn., assignors to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Oct. 23, 1970, Ser. No. 83,516
Int. Cl. B65d *5/72, 83/00*
U.S. Cl. 229—17 R **2 Claims**

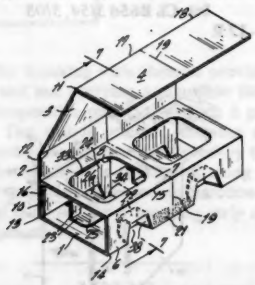


A pour spout carton is provided extending on opposite sides of a fold line connecting two adjacent carton panels. The spout has a generally oval outline with the lower end defined by outwardly bowed fold lines and the upper portion defined by cut lines or perforated lines. A pair of angularly related fold lines extend across the oval outline at the juncture of the outwardly bowed fold lines and outwardly bowed weakened line. Reinforcing panels are secured to the panel area containing the pour spout. Short connecting straps connect the portions of the reinforcing panels in face contact with the two adjacent carton panels so that the reinforcing panels do not interfere with the folding of these two adjacent carton panels.

3,692,228
UNIT DOSE DEVICE

Harold B. Spiegel, Clearwater, Fla., assignor to Pharmacare, Inc.

Continuation-in-part of Ser. No. 886,147, Dec. 18, 1969, abandoned. This application Dec. 29, 1970, Ser. No. 102,392
Int. Cl. B65d *5/48*
U.S. Cl. 229—29 F **16 Claims**



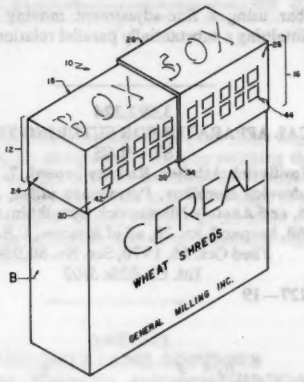
A base extends between a back and a front. The base is connected to the back at a first fold and to the front at a second fold. A support, having a hole, extends substantially between the back and the front. The support is connected to the front at a third fold. A top is pivotally connected to the back at a fourth fold. The top is movable to cover the support. Means are provided for fixing the support to the back between the first and fourth folds. Means are also provided for removably securing the top in a position overlying the support and spaced apart therefrom.

3,692,229
Patent Not Issued For This Number

3,692,230
BOX-SOX SYSTEM FOR PROTECTING CONTENTS OF OPENED BOXES

Anita L. Kapiloff, Mariposa, Stevenson Rd. Extended, Stevenson, Md.

Filed Jan. 4, 1971, Ser. No. 103,522
Int. Cl. B65d *5/64*
U.S. Cl. 229—43 **5 Claims**

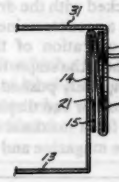


Adjustable semi-rigid, or rigid plastic covers for protecting the contents of opened food boxes and the like during storage and for preserving pouring sanitation; deep skirts are provided for simplest protection of all types of openings and special dovetail provisions are made to assure free, non-jamming operation.

3,692,231
MEANS FOR LOCKING A LID TO A CONTAINER

Nicholas R. Neitzke, Lakewood, and Chester E. Adams, Jr., Newbury Park, both of Calif., assignors to Weyerhauser Company, Tacoma, Wash.

Filed Dec. 18, 1970, Ser. No. 99,385
Int. Cl. B65d *5/68*
U.S. Cl. 229—45 **3 Claims**



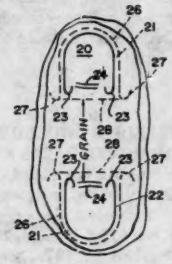
A container having a downwardly extending locking tab on a downwardly extending flap of the container body. The tab fits into an aperture in the sidewall of the lid to hold the lid on the container body. The lid sidewall may be double layered. The locking aperture would be in the inner layer, and another aperture would be in the outer layer aligned with and providing access to the tab, allowing the tab to be pushed inwardly to unlock the lid.

3,692,232

FINGER HOLE ARRANGEMENT FOR ARTICLE CARRIERS

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 4, 1970, Ser. No. 95,095
Int. Cl. B65d 5/46
U.S. Cl. 229—52 B 3 Claims



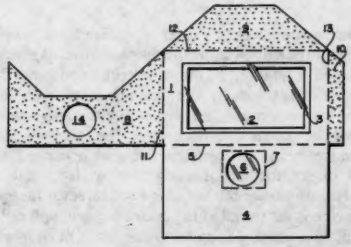
An article carrier having a pair of top closure flaps arranged in overlapping and underlapping relationship is provided with spaced fold down tabs defining apertures for lifting the loaded carrier. The fold down tabs are each defined by a continuous cut line, each end of which terminates in a curved cut line. Preferably the tabs are of different areas to offset areas prone to tear, so that the area of a closure flap is reenforced by the continuous board of the other closure flap. This is especially important when the grain of the paperboard of the carton runs from finger hole to finger hole.

3,692,233

SPECIALTY ENVELOPE

William J. Carter, Jr., 4700 LaVista Rd., Tucker, Ga.

Filed May 13, 1971, Ser. No. 143,039
Int. Cl. B65d 27/04
U.S. Cl. 229—71 9 Claims



A tamper proof specialty envelope includes a quadrilateral base panel to each edge of which a sealing flap is foldably joined. A main one of the sealing flaps is configured in the same general shape as the base panel and is folded into flat face-to-face relation therewith. The three remaining sealing flaps are foldably joined to the other three edges of the base panel respectively and are configured to form a composite panel formed of the three remaining coplanar flaps which are arranged in overlying relation to said one main sealing flap and secured thereto and constitute a tamper proof closure for an item such as a coin or a commemorative stamp disposed therein and observable through viewing windows formed in said base panel and in said main flap and in a certain one of said coplanar flaps. A sealing stamp is then affixed to portions of the three coplanar flaps and cancelling indicia is imprinted over the sealing stamp and over adjacent portions of each of the three coplanar sealing flaps.

3,692,234

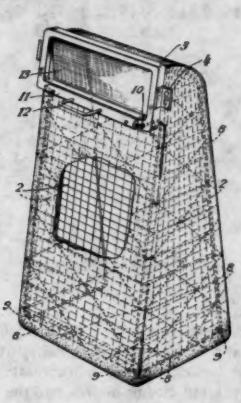
Patent Not Issued For This Number

3,692,235

LAMINATES

Carol Ann Franiel, 3 Cherry Tree Ave., Staines, England

Filed July 17, 1970, Ser. No. 55,760
Claims priority, application Great Britain, July 21, 1969, 36,575/69
Int. Cl. A65f 1/00
U.S. Cl. 232—1 1 Claim



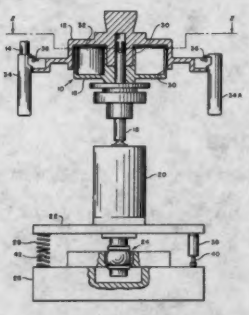
The invention provides a laminate comprising a ceramic layer faced with a fabric impregnated with synthetic rubber. The laminate is fire-proof and finds particular utility in the construction of waste disposal containers. The invention further provides a container comprising a waste inlet, an outer wall formed of a laminate in accordance with the invention, an inner bag to receive the waste and means operable from outside the container to draw the base of the inner bag towards the waste inlet thereby discharging the waste through the inlet.

3,692,236

SELF-BALANCING CENTRIFUGE METHOD AND APPARATUS

Stanley L. Livshitz, Bronx, N.Y., and Robert Alan Mayo, Verona, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,348
Int. Cl. B04b 9/12
U.S. Cl. 233—26 18 Claims



A centrifuge of the type used for a number of individual test samples in separate sample containers is dynamically balanced

automatically by means of a counterbalancing mass contained in an annular chamber within the centrifuge wheel. The centrifuge wheel is mounted as an inverted pendulum about a fixed pivot and spring biased to the vertical position. The counterbalancing mass, which is at the same vertical level as the sample containers, automatically moves angularly to the counterbalancing position at speeds above the speed corresponding to the natural vibration frequency of the pendulum system.

3,692,237

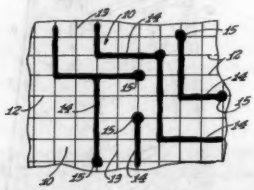
PROCESS FOR DIGITIZING ELECTRIC CIRCUIT PATTERNS

Leo Fiderer, 5640 Aldea Ave., Encino, Calif.

Filed Aug. 3, 1970, Ser. No. 60,557

Int. Cl. G06k *1/00*

U.S. Cl. 234—2 **10 Claims**



An improved process is provided for digitizing electric circuit patterns and for transferring such patterns into binary control data for subsequent use in automatic machinery in the fabrication of printed circuit boards and the like. In the practice of the process of the invention, a particular pattern is layed out on a transparent or translucent sheet or strip which has X-axis and Y-axis grid lines thereon. The grid sheet or strip is then passed over a read station at which photocells are used in conjunction with light sources to detect the presence or absence of a circuit line on each of a multiplicity of X- or Y-axis segments of the grid lines. The photocells generate binary digital signals which may be stored on/any appropriate medium, such as a punched paper tape, or other media, for the subsequent control of automatic machinery in the fabrication of printed circuit boards and the like.

3,692,238

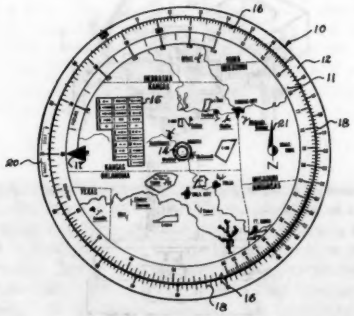
NAVIGATION AID

George M. Boyd, 2904 Westover St., Wichita, Kans.

Filed July 30, 1970, Ser. No. 59,634

Int. Cl. G06c *3/00*

U.S. Cl. 235—88 **10 Claims**



An air navigational aid device comprising the provision of the latitude and longitude of the air bases listed on the device; a copy of the Morse code; a flight planning diagram for noting location, heading, distance, time, fuel, and/or ETA thereon; a map of a geographic area showing the runway patterns of the air bases, and locating and naming the air bases and restricted zones in the mapped area; a circular time-distance computer for calculating ground speed, flight time, and fuel supply; tables of headings and distances from a selected air base to the other air bases in the area; a statute mile to knot conversion scale; the location of each TACAN facility of each air base; and the elevations and runway headings for each air base; all on a device comprising a large circular disk sandwiched between two smaller disks that are rotatably connected together at their centers.

3,692,239

CONTROL SYSTEM FOR A DOUBLE BURNER OVEN OR THE LIKE AND IMPROVED PARTS AND METHOD FOR THE SAME OR THE LIKE

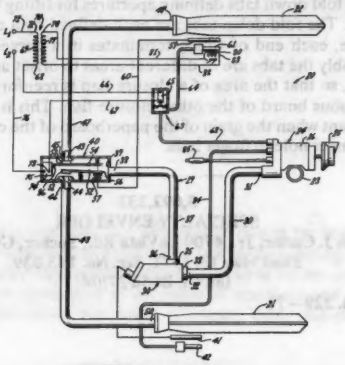
Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 670,648, Sept. 26, 1969, abandoned.

This application Feb. 11, 1971, Ser. No. 114,691

Int. Cl. F23n *1/00*; G05d *23/02*

U.S. Cl. 236—15 A **12 Claims**



This disclosure relates to a control system for a bake burner and a broil burner of a domestic oven or the like wherein a control device is adapted to interconnect a source of fuel to a conduit means leading to the bake burner and the broil burner, the conduit means having a diverter valve therein intermediate the control device and the burners with the diverter valve being so constructed and arranged that the same will direct the fuel issuing thereto from the control device only to the bake burner when the selector means of the control device is set for a baking operation and will only direct the flow of fuel issuing thereto to the broil burner when the selector means of the control device is set for a broiling operation. In addition, a safety valve is disposed in the conduit means either intermediate the control device and the diverter valve means or intermediate the diverter valve means and the bake burner to be only opened when a certain flame means exists at a bake pilot burner means for the bake burner, the control device thermostatically controlling the operation of the bake pilot burner means.

3,692,240

PNEUMATIC CONTROL SYSTEM

Donald H. Spethmann, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

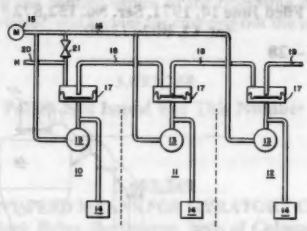
Filed July 24, 1970, Ser. No. 57,919

Int. Cl. G05d *23/lts 5*; G05b *11/48*

U.S. Cl. 236—82 **8 Claims**

A pneumatic control system for optimally controlling a condition in a plurality of zones, each zone having a thermostat or

the like. Each thermostat is in communication and has proximately associated therewith valve means. The valve means are suitably interconnected and are in communication with a



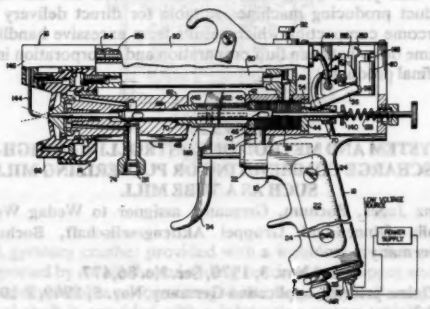
source of air pressure and output means, which output means provides a signal indicative of either the highest or the lowest of the output pressures of the thermostats.

3,692,241

SPRAY APPARATUS WITH ATOMIZATION DEVICE

Arvid C. Walberg, Lombard, Ill., assignor to Gourdine Coating Systems, Inc., Livingston, N.J.

Filed Sept. 21, 1970, Ser. No. 73,700
Int. Cl. B05b 5/00; F23d 11/28
U.S. Cl. 239—15 **7 Claims**



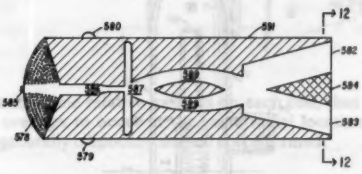
An improved atomization device for spray apparatus in which the nozzle used for atomization of materials has an exposed surface to atmosphere that is continually wiped by the flow of the material dispensed therefrom which forms finely divided atomized particles. After the exiting material has been atomized into particles they tend to be confined in a region generally in the shape of a cone, the base of which is adjacent the nozzle and extends forward therefrom. The flow of the atomized particles out of the cone-shaped region along their flow path may be termed as turbulent flow. In one exemplary embodiment, an electrical atomization nozzle produces finely divided particles in the presence of an electrical corona discharge having its principal ionization component directed in a rearward direction along the path of the projected coating material particles to be charged. In the aforesaid embodiment, a substantial portion of the coating material particles exiting from the material dispensing nozzle flows along the exposed surface of the nozzle in the presence of the corona discharge in the region adjacent thereto where an associated air stream intercepts the exiting coating material, thereby creating a significant vacuum due to aspirating action in the region adjacent to the nozzle, enabling the coating material to flow across the external surface of the nozzle under the influence of air in circular or turbulent motion, causing the surface of the nozzle to be continuously wiped by the flow of the coating material before it subsequently forms finely divided atomized particles, which may be charged in the presence of the corona discharge.

3,692,242

FLUID DIVERTING HOUSINGS AND AUXILIARY DEVICES

David John Wayfield, R.D. 1, Box 6, New Park, Pa.

Filed Oct. 9, 1968, Ser. No. 766,102
Int. Cl. B63h 11/10; B64c 15/00
U.S. Cl. 239—265.19 **16 Claims**



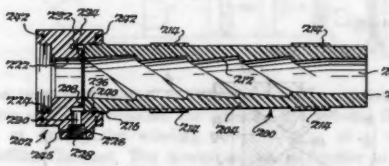
This invention relates particularly to water-borne craft constructed with a hull having cavities formed between the inner and outer surfaces of said hull. These cavities form fluid amplification means and passages leading to and away from said fluid amplification means. These passages may be defined as inlet, outlet and control passages which lead to apertures in said hull and through which said apertures, fluid is passed for the purpose of steering said craft.

3,692,243

NOZZLE

Maurice C. Breunsbach, Hamburg, N.Y., assignor to Spirolet Corporation, North Tonawanda, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,747
Int. Cl. B05b 7/10
U.S. Cl. 239—401 **8 Claims**



An elongated hollow body formed of a resiliently yieldable material having a bore therethrough. A thread formation of helical configuration is formed in the bore and the bore tapers gradually toward its outlet end. Passages formed in the inlet end of the nozzle are variable in size to control the rate of liquid flow into the bore.

3,692,244

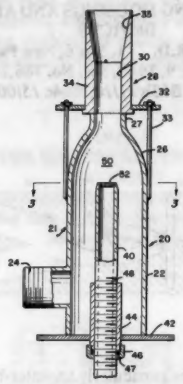
SPRAY NOZZLE FOR GAS SCRUBBERS

Roland L. Lincoln, Salvang, Calif., assignor to Fuller Company

Filed Nov. 19, 1970, Ser. No. 91,089
Int. Cl. B05b 7/04
U.S. Cl. 239—419 **2 Claims**

A liquid spray nozzle which includes a pair of concentric tubular members. Liquid to be sprayed is supplied to the outer tubular member and compressed gas is supplied to the inner tubular member. The outer tubular member includes a reducer portion followed by an expander portion. The liquid and gas mix in the reducer portion and the liquid-gas mixture is discharged from the nozzle through the expander portion.

The nozzle is particularly designed for use with a gas scrubber and is positioned in the flow path of the gas to be cleaned as it



passes from the dirty gas inlet to the clean gas outlet. The liquid spray is countercurrent to the flow of gas to be cleaned.

3,692,245

FLUID ATOMIZERS

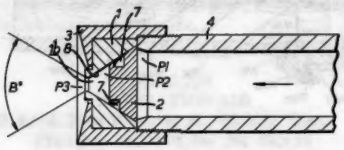
Arthur Michael Needham, Backwell, and David Tindall, Dibden Purlieu, both of England, assignors to J. & T. Engineers (Ascot) Limited

Filed Jan. 15, 1971, Ser. No. 106,716

Claims priority, application Great Britain, Jan. 16, 1970, 2,241/70

Int. Cl. B05b *1/34*

U.S. Cl. 239—488 **9 Claims**



The invention comprehends a fluid atomizer comprising an atomizer nozzle having a discharge orifice communicating with a cavity in said nozzle of convergent axial section towards said discharge orifice, and a swirler insert snugly fitted in said cavity and having an axial section complementary thereto, said swirler insert being axially spaced from said discharge orifice to define between the smaller cross sectional end of said swirler insert and said discharge orifice a swirl chamber forming part of said cavity, said swirler insert having a plurality of passages extending in and along its peripheral wall to provide for fluid flow, between the interfitting peripheral surfaces of said atomizer nozzle and said swirler insert, through said passages each of said passages extending at its discharge end adjacent said swirl chamber in a direction generally tangential of said chamber, so that fluid emerging from said discharge end will flow in an axial direction generally following the peripheral surface of said swirl chamber and tangentially thereto.

3,692,246

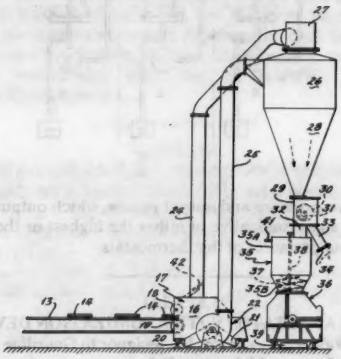
FLUFF PREPARATION SYSTEM AND APPARATUS

John E. Law, St. Louis, Mo., and Donald C. Cheesman, Oconomowoc, Wis., assignors to Williams Patent Crusher & Pulverizer Company, Inc., St. Louis, Mo.

Filed June 14, 1971, Ser. No. 152,872

Int. Cl. B02c *13/00*

U.S. Cl. 241—28 **9 Claims**



A method or system of applying apparatus to the production of fluff which is used in the making of absorbent articles, like diapers, which after use can be thrown away. The method is directed to preparing fluff from cheap wood pulp sources in a way that yields a continuous stream of fluff for the final product producing machines suitable for direct delivery to overcome compacting which results from excessive handling or time delay between fluff preparation and incorporation into the final product.

3,692,247

SYSTEM AND METHOD OF CONTROLLING A HIGH-DISCHARGE COMMINUTING OR PULVERIZING MILL, SUCH AS A TUBE MILL

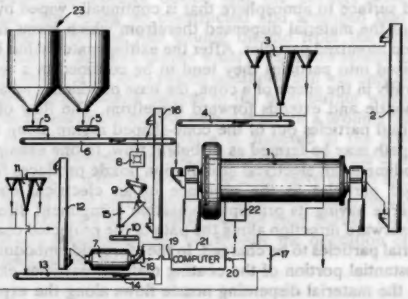
Heinz Jager, Bochum, Germany, assignor to Wedag Westfalia Dinnendahl Groppel Aktiengesellschaft, Bochum, Germany

Filed Nov. 3, 1970, Ser. No. 86,477

Claims priority, application Germany, Nov. 5, 1969, P 19 55 569.2

Int. Cl. B02c *17/24*

U.S. Cl. 241—30 **2 Claims**



Method of controlling a high discharge comminuting mill such as a tubular mill which comprises supplying part of a main flow of material to be comminuted in an operating comminuting mill to a control mill located upstream of the operating mill in direction of main flow and having a mode of operation substantially similar to that of the operating mill, comminuting the part of the material flow in the control mill, mea-

suring given physical properties at the control mill for determining technical data necessary for operating the operating mill, transmitting the data to a computer, converting the data in the computer to control values for the operating mill, and transmitting the control values to the operating mill for controlling the latter; and system for carrying out the method.

3,692,248

Patent Not Issued For This Number

3,692,249

LUBRICANT FEED MEANS FOR GYRATORY CRUSHERS

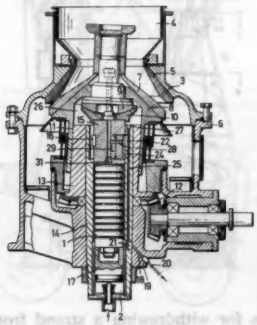
Hanns Decker; Heinz Hurtmanns, both of Cologne, and Helmut Stockmann, Wesseling, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Dec. 18, 1970, Ser. No. 99,543

Claims priority, application Germany, Jan. 2, 1970, P 20 00 141.6

Int. Cl. B02c *2/04*

U.S. Cl. 241—215 **2 Claims**



A gyratory crusher provided with a wobbling crusher cone supported by a dish-shaped sliding bearing on the upper end of an axially slidable piston arranged in a stationary hollow cylindrical shaft is provided with a lubricating system which particularly supplies the sliding bearing with a lubricant. In the wall of the hollow cylindrical shaft is arranged a lengthwise extending bore whose lower end is supplied with lubricant by a supply channel in the housing of the crusher. Near the upper end of this bore the same communicates with a longitudinal slot in the piston from which a radial bore leads to an axial bore in the piston. This axial bore leads directly to the sliding bearing at the upper end of the piston and also communicates with its lower end with a chamber formed by the lower portion of the tubular shaft in which a supporting spring for the piston is arranged.

3,692,250

COIL WINDING MACHINE

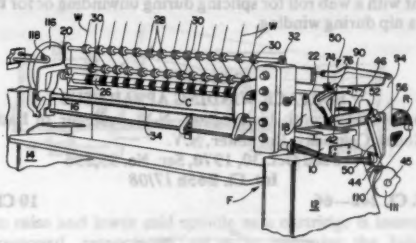
Donald S. Lee, Brookfield, and Richard Settanni, Bethel, both of Conn., assignors to Leesona Corporation, Warwick, R.I.

Filed Dec. 22, 1969, Ser. No. 887,205

Int. Cl. H01f *41/12*

U.S. Cl. 242—7.08 **2 Claims**

A machine for winding electrical coils in "gang" style on an elongated arbor. The machine includes serving means for inserting a sheet of paper or other insulating material automatically between each successive layer of wire in each of the coils on the arbor. Each sheet is cut automatically to a length sufficient to wrap around the then-existing layers of wire in the coils, each sheet overlapping slightly at its beginning and terminal ends. Means are provided to commence serving each



sheet at the same relative location on each coil, thus causing all the overlaps to occur at the same radial location on the coil. A generally elliptically shaped coil is formed.

3,692,251

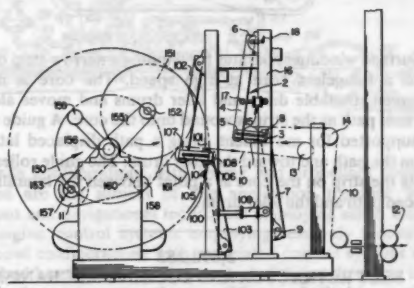
WINDING, UNWINDING AND TENSIONING APPARATUS

James J. Meiead, West Chester, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 26, 1970, Ser. No. 83,730

Int. Cl. B65h *19/12*

U.S. Cl. 242—58.2 **14 Claims**



The invention relates to filament tension regulation apparatus useful to regulate the tension in a moving filament such as during the winding or unwinding of a web or threadlike filament. The invention relates further to a web guide roller assembly for assisting in the movement of a web relative to a roll of the web material such as a splicing roll apparatus useful in web unwinding or a lay-on roll apparatus for use in web winding. The invention further relates to web unwinding apparatus, to web winding apparatus, and to web winding and unwinding apparatus involving combinations of the splicing roll apparatus, the lay-on roll apparatus, and web tension regulating apparatus. The filament tension regulation apparatus comprises a roller mounted for rotation in members disposed at the ends of the roller, the members being supported by pivot arms extending upwardly and downwardly of the member. The arms are of equal length and the roller is centrally located on the member between the pivot areas such that the roller is capable of horizontal motion supported by the pivot arms. The moving filament engages the roller in such a way that horizontal force is applied to the roller in a direction in opposition to a desired pre-determined horizontal force. Changes in filament tension relative to the pre-determined horizontal force cause horizontal motion of the roller and this motion is utilized to adjust tension to a desired value such as by changing filament speed. The web guiding roll apparatus comprises a pair of rollers mounted for rotation and pivotally supported by pivot arms as in the case of the filament tension regulating device. The rollers, however, are located at points symmetrical about a point midway between the pivot

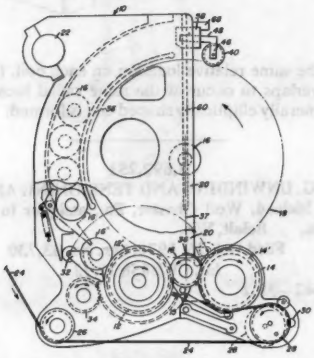
arms and thus will undergo pivoting motion. The arms are of equal length and the rollers are preferably of equal mass whereby the device is easily moved into and out of engagement with a web roll for splicing during unwinding or for forming a nip during winding.

3,692,252

SURFACE WINDING APPARATUS

Thomas J. Perconti, Irondequoit, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,596
Int. Cl. B65h *17/08*
U.S. Cl. 242—66 10 Claims



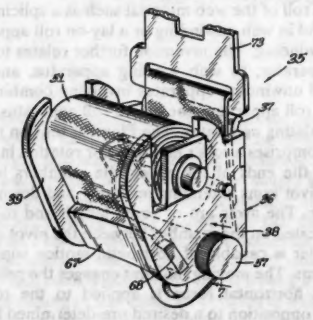
Surface winding apparatus for winding a narrow strip of film onto a flangeless core at high speed. The core is nested between rotatable drive and idler drums and moves along a vertical path as the strip is wound onto the core. A guide roller is supported for movement along a path displaced laterally from the path and toward the idler drum. The guide roller contacts the strip on the core at a point between the laterally displaced path and the idler drum.

3,692,253

BELT RETRACTOR AND LOCKING MECHANISM

Robert J. Curran, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 21, 1965, Ser. No. 465,629
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 28 Claims



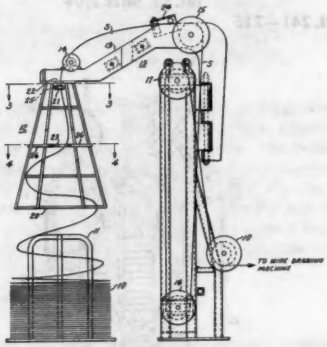
A belt retracting apparatus includes a spring-motivated reel and a jaw clamp for gripping the belt. One portion of the jaw clamp is a freely rockable locking lever about which a portion of the belt is trained such that the tension exerted by the reel rocks the lever to unlock the clamp releasing the belt for retraction, and a greater tension rocks the lever in the opposite direction to lock the clamp gripping the belt to prevent extraction. A latch is provided for disabling the automatic gripping action during an initial extraction of the belt but once belt tension is relaxed, further extraction is prevented until the latch is reset by retracting a predetermined portion of belt. The latch may be reset by a double thickness of belt or by the number of convolutions on the reel. The other portion of the jaw clamp is a resilient bowed beam which deflects under load to increase the gripping area and also to change the effective lever arm ratio of the locking lever. Thus, the belt is protected against destructive gripping forces under extremes of belt tension by changing the leverage ratio of the locking lever and increasing the area of gripping contact.

3,692,254

STRAND GUIDING APPARATUS

Robert J. Ebert, and William H. Paxton, both of Johnstown, Pa., assignors to Bethlehem Steel Corporation

Filed Dec. 17, 1970, Ser. No. 99,180
Int. Cl. D05b *49/00*; B65h *49/00*
U.S. Cl. 242—129.62 4 Claims



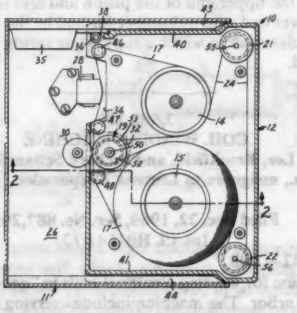
Apparatus for withdrawing a strand from a horizontally disposed coil having guide means adapted to control the build up of torsional stress in the strand and to carry the stress along with the strand to avoid formation of kinks therein.

3,692,255

BELT DRIVEN TAPE CARTRIDGE

Robert A. Von Behren, Mendota, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 17, 1971, Ser. No. 154,039
Int. Cl. G11b *15/32*
U.S. Cl. 242—192 12 Claims



A two-reel tape cartridge in which a flexible belt having a coefficient of elasticity in the range from 0.01 to 0.25 m./nt.m.

and a pretension of at least 1.6 nt. extends around guide rollers adjacent the reels and a driving roller between the reels and contacts the tape on the reel hubs. Rotation of the driving roller causes the belt to drive the tape reels to tension the tape and to move the tape between the reels. The cartridge construction permits low power bidirectional drive and rapid acceleration and deceleration of the tape by a single reversible drive motor.

3,692,256

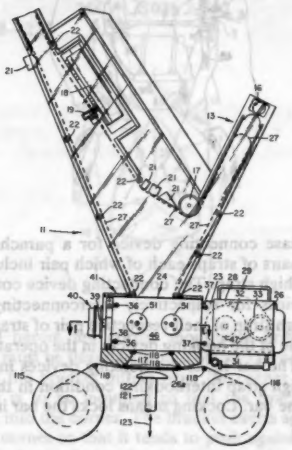
TAPE POSITIONING APPRATUS

Bryan F. Kember, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed April 1, 1970, Ser. No. 24,763

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—198 **11 Claims**



A magnetic tape cassette, particularly for television, is arranged to be positioned against a precision wall of a tape transport for exposing a run of tape between the tape packs of the cassette in the precision place for acceptance by the transport. The hubs are formed with springloaded portions engageable with the cassette side walls for braking the hubs to avoid spilling the tape when the cassette is separated from the transport, and the hubs are adapted to be engaged by extension means from the transport for centering and driving the hubs and for releasing the brakes to allow free operative rotation of the hubs. The hub is constructed with the operative portions in two separable parts which support a tape mounting sleeve which is removable with the tape, saving the expense of providing more than two operative hub portions for each cassette. The tape is attached to the sleeve by means of a dovetail slot and toed clip member. An arrangement adapting the apparatus for positioning the run of tape when it is mounted on ordinary reels is also disclosed.

3,692,257

AUTOMATIC TAPE RECORDING-REPRODUCING APPARATUS

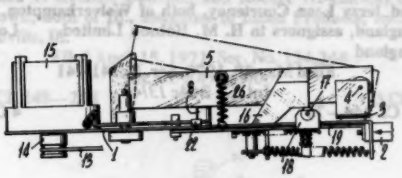
Nardino Righi, Via Maniago 2, Milan, Italy

Filed May 24, 1971, Ser. No. 146,172

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—198 **4 Claims**

An automatic type of "cassette" recording-reproducing apparatus, comprising a support plate to which a cartridge carrying frame is pivoted and movable between upper and lower positions for engaging a pair of drawing spindles with the corresponding tape take-up reel, wherein the drawing spindle more closely spaced from the pivoting of said frame is made axially movable and cam means are provided which are effec-



tive to raise and lower said spindle as a cartridge is inserted and removed, respectively, so as to minimize the height dimension of the recording-reproducing apparatus.

3,692,258

MISSILE CONFIGURATIONS, CONTROLS AND UTILIZATION TECHNIQUES

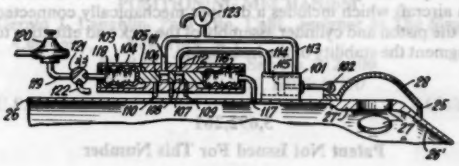
Arthur R. Parilla, P.O. Box 127, Mountain Lakes, N.J.

Division of Ser. No. 607,068, Jan. 3, 1967, Pat. No. 3,489,373.

This application Oct. 3, 1968, Ser. No. 767,583

Int. Cl. F42b *15/18* ; F02k *1/08, 1/16*

U.S. Cl. 244—3.21 **31 Claims**



Missile configurations with engine and propellant control systems are the subject of this application together with weapons and navigational techniques employing same. Reaction engine control systems employing relatively moveable plug-cowl configurations with associated control systems are described herein for providing control of thrust direction and magnitude, engine operating conditions, missile kinematics, and other parameters of liquid and solid propellant rockets.

3,692,259

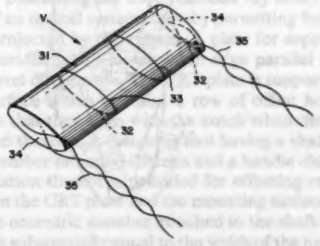
WING-TIP VORTICES CONTROL

Shao Wen Yuan, 2021 Highboro Way, Falls Church, Va.

Filed June 26, 1970, Ser. No. 50,179

Int. Cl. B64c *23/06*

U.S. Cl. 244—40 **19 Claims**



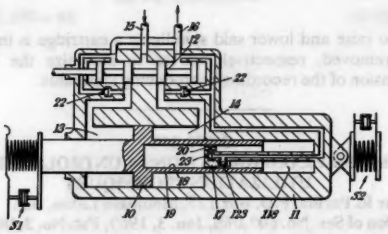
This invention is for wings of all types, such as fixed wings for aircraft and hydrofoil boat, and rotary blades (or wings) for helicopters and turbines, to be equipped with a row of chordwise tangential jets along the edge or end surfaces of the wing tips for counterbalancing and controlling the wing-tip or blade-tip vortices.

3,692,260

DAMPING DEVICES

Stanley George Glaze, Kingswinford; Charles Philip Smith, and Jerzy Leon Courtenay, both of Wolverhampton, all of England, assignors to H. M. Hobson Limited, London, England

Filed May 28, 1970, Ser. No. 41,441
Int. Cl. B64c *13/40*
U.S. Cl. 244—78 4 Claims



A hydraulic jack for actuating the flying control surface of an aircraft which includes a damper mechanically connected to the piston and cylinder assembly of the jack and effective to augment the stability of the installation.

3,692,261

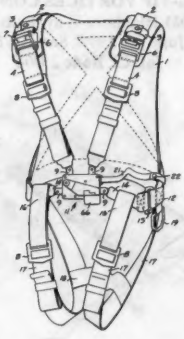
Patent Not Issued For This Number

3,692,262

PARACHUTE HARNESS AND SINGLE POINT RELEASE

John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif.

Filed Dec. 11, 1970, Ser. No. 97,250
Int. Cl. B64d *17/32*
U.S. Cl. 244—151 A 4 Claims



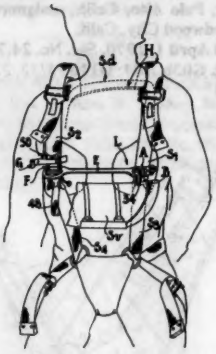
A parachute harness in which all the straps and belts are connected to a single release, and the leg straps are so connected to the lap belts as to provide a single releasable connection for each leg strap and lap belt releasably connected to one another; the single release is detachably connected to one of the straps.

3,692,263

QUICK-RELEASE CONNECTING DEVICE FOR A PARACHUTE HARNESS AND A HARNESS INCLUDING SAID DEVICE

Marcel Pravaz, Clichy, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

Filed Dec. 16, 1970, Ser. No. 98,804
Claims priority, application France, Feb. 27, 1970, 7007095
Int. Cl. B64d *17/30*
U.S. Cl. 244—151 A 7 Claims



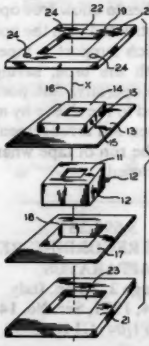
Quick-release connecting device for a parachute harness having two pairs of straps each of which pair includes a chest strap and a thigh strap. The connecting device comprises two hooking devices for respectively interconnecting the chest strap and thigh strap of their respective pair of straps and a bar pivoted to one of the hooking devices in the operative position of the bar. The bar locks the hooking devices in their chest strap and thigh strap interhooking condition in the operative position of the bar. Locking means locks the bar in the operative position.

3,692,264

SHOCK ISOLATION MOUNTS FOR FRAGILE DEVICES

Mahlon D. Burkhard, Hinsdale, and Russell J. Maxwell, West Dundee, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed July 13, 1970, Ser. No. 54,461
Int. Cl. G04c *3/00*
U.S. Cl. 248—15 20 Claims



Shock isolation mounts for miniature microphones, sound reproducers, and other fragile devices, in which the device is suspended between thin film support members mounted on a rigid frame in a configuration such that shock stresses of sub-

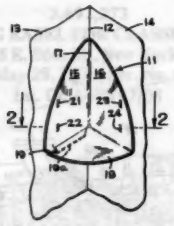
stantial magnitude occurring in either direction along a given path are absorbed almost entirely by tensional stress of one or more of the film support members. Vibration isolation is also provided, separately from the shock isolation, by means of one or more vibration absorption elements, formed of rubber or other material of high resilience and high compliance in compression, interposed between the fragile device and support members or between the support members and the frame or between the frame and an external support structure. The support members are usually made of plastic, such as a polyester film, and may be pre-formed to fit the external configuration of the transducer or other device or may be flat strips with no pre-forming required.

3,692,265

CORNER MOUNTABLE BRACKETS

Forrest C. Barriger, 2617 Northwood Dr., San Jose, Calif.

Filed Sept. 26, 1969, Ser. No. 861,332
Int. Cl. G03b *21/00*
U.S. Cl. 248—222 **1 Claim**



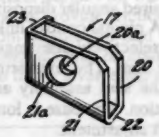
Disclosed herein are corner mountable brackets having sides which must be flexed to fit into place. The angle made by the sides of the bracket differs from the corner angle where the bracket is to be mounted so that the bracket must be flexed to fit into the corner. The bracket exerts spring tension against the corner so that it tends to push against the corner members. To fasten the bracket in place, its sides are provided with fastening means, such as sharp tabs projecting toward the walls forming the corner. The tabs are forced into the corner members by the spring tension.

3,692,266

VERSATILE GRILL SUPPORTS

Harry Jacobs, 640 W. 22nd St., Holland, Mich.

Filed Oct. 26, 1970, Ser. No. 83,987
Int. Cl. A47h *1/10*
U.S. Cl. 248—224 **4 Claims**



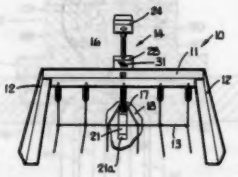
A plurality of mounting brackets are provided for attaching a grill to a door or window. Each bracket is formed in one embodiment from a pair of parallel, spaced vertical walls coupled together at the bottom edges and open along the top edges to receive a flat portion of the grill. When four such brackets are employed at the four corners of a window or door, the left side brackets include a third vertical wall joining the left edges of the pair of vertical walls and the right side brackets include a third vertical wall joining the right side edges of the pair of vertical walls. A grill can be easily dropped into the brackets for installation or lifted therefrom for removal.

3,692,267

POSITIONAL ADJUSTMENT DEVICE FOR CASKET BEDS

Nicholas T. Kronas, Danville, and Robert W. Ehrich, Georgetown, both of Ill., assignors to Estad Products, Inc., Danville, Ill.

Filed April 15, 1971, Ser. No. 134,344
Int. Cl. A47g *19/00*
U.S. Cl. 248—288 **3 Claims**



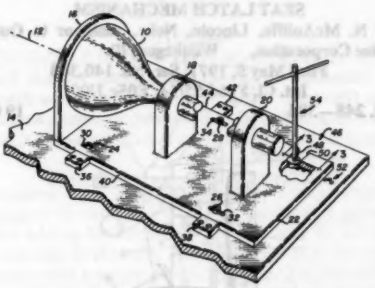
Disclosed is a mechanism for elevating or lowering a bed within a casket comprising a vertical threaded rod or elevating screw which carries a stop member which can be adjustably positioned on the rod for adapting the mechanism for various casket heights.

3,692,268

POSITIONING MECHANISM

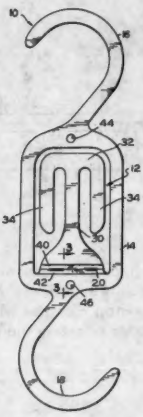
Gerald J. Laughlin, Palo Alto, Calif., assignor to The Singer Company, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,200
Int. Cl. F16m *13/00*; H05k *13/00*
U.S. Cl. 248—346 **4 Claims**



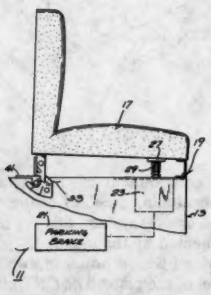
The disclosed embodiment of the present invention is a mechanism for positioning the CRT (cathode ray tube) at the object plane of an optical system, thereby permitting focusing of the image projected by the system. A plate for supporting the CRT is provided with a notch in an edge parallel to the direction of travel of the plate. The CRT plate is supported by a mounting surface which contains a row of offset holes in such a position that they align with the notch when the CRT plate is installed thereon. A camming tool having a shaft with an eccentric member mounted thereon and a handle disposed for manual rotation thereof is provided for effecting relative motion between the CRT plate and the mounting surface. The diameter of the eccentric member attached to the shaft of the camming tool is substantially equal to the width of the notch in the edge of the CRT plate, and the diameter of the shaft of the camming tool is substantially equal to the diameter of the holes in the mounting surface. In use, the shaft of the camming tool is inserted into one of the holes in the mounting surface, such that the eccentric member is received within the notch. Rotation of the camming tool imparts a force on the CRT plate which, in turn, displaces the CRT along the optical axis.

3,692,269
SHIRT DISPLAY HANGER
Paul N. Hales, 9050 S. W. Scholls Ferry Rd., Portland, Oreg.
Filed June 1, 1970, Ser. No. 42,341
Int. Cl. A47g 29/00
U.S. Cl. 248—360 2 Claims



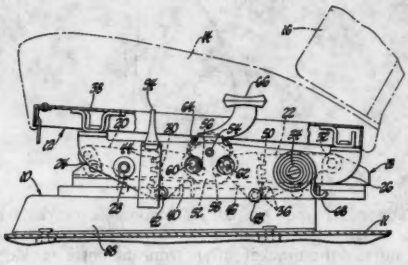
Plastic shirt display hangers each includes a clip hinged to a hanger body between a first position extending perpendicular to the plane of the hanger body for holding a standup shirt package, and a second position substantially parallel to the plane of the hanger body for holding a flat shirt package.

3,692,270
SEAT LATCH MECHANISM
Gerald N. McAuliffe, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 5, 1971, Ser. No. 140,343
Int. Cl. F16d 65/14; E05c 3/00
U.S. Cl. 248—384 19 Claims



Disclosed herein is a seat which is mounted on a vehicle frame for pivotal movement relative to an in-use position, together with a parking brake operable to prevent vehicle movement upon movement of the seat through a first predetermined distance from the in-use position, and a latch mechanism on the seat and on the frame and including first means for preventing movement of the seat through the first predetermined distance from the in-use position, and second means selectively movable between first and second positions, and being operable, when in the first position, for preventing limitation of movement of the seat by the first means, whereby to allow pivotal movement of the seat from the in-use position beyond the first predetermined distance, and for preventing movement of the seat through a second predetermined distance greater than the first predetermined distance from the in-use position and, when in said second position, for permitting seat movement prevention by the first means and for effecting movement of the second means to the first position upon movement of the seat toward the in-use position from a position at the first predetermined distance from the in-use position.

3,692,271
ADJUSTABLE SEAT ASSEMBLY
Robert I. Homier, Farmington, and Raymond C. Posh, Livonia, both of Mich., assignors to Lear Siegler, Incorporated, Detroit, Mich.
Continuation of Ser. No. 795,562, Jan. 31, 1969, abandoned.
This application Feb. 24, 1971, Ser. No. 118,512
Int. Cl. F16m 11/24, 13/00; B60n 1/02
U.S. Cl. 248—394 12 Claims

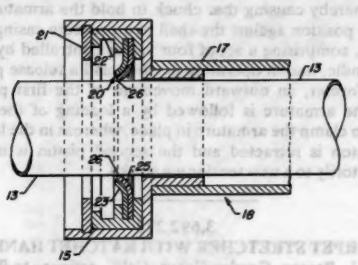


An adjustable seat assembly including a base, a seat support, and means for independently adjusting the vertical elevation of the front and rear portions of the seat support relative to the base including on each side of the assembly a pair of lever arms each being pivotally connected to the base and independently pivotally connected to the seat support. The pivotal connection of each of the levers to the seat support is disposed inwardly and between the pivotal connections of the levers to the base. The inward end of each of the levers has formed thereon a plurality of notches. Latch plates pivotally mounted on the seat support include tapered teeth engageable with any of the notches in the associated lever arms to latch the lever arms in desired angular dispositions corresponding to desired elevations. A pivotal control link is operable by way of an actuator arm to selectively disengage the latch plates from the associated lever arms. The lever arms and control links on opposite sides of the seat assembly are interconnected for synchronous operation. The base is longitudinally slidable to provide fore-and-aft adjustment.

3,692,272
SLIDE RAIL ASSEMBLY FOR A VEHICLE SEAT
Arthur O. Radke, 133 W. Oregon St., Milwaukee, Wis.
Filed Nov. 30, 1970, Ser. No. 93,674
Int. Cl. B60n 1/02; F16c 29/08
U.S. Cl. 248—429 2 Claims

An improved slide rail assembly in a vehicle seat for moving a vehicle seat cushion assembly relative to a vehicle seat base assembly. The slide rail assembly has shaft members and

sleeve members slideably engaged and interposed between the cushion and base assemblies. Annular wiper members are



fastened to the ends o the sleeve members in continuous contact with the shaft members, thereby forming sliding seals between the shaft members and the sleeve members.

3,692,273

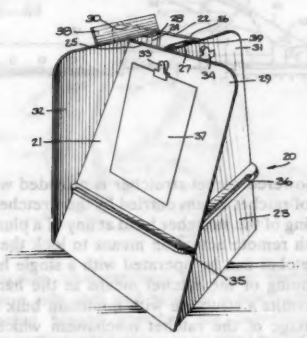
STANDING EASEL FOR CLASSROOM USE

Myron Woolman, 55 E. 86th St., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,169

Int. Cl. A47b *97/08*

U.S. Cl. 248—460 **24 Claims**



An easel designed for classroom use and modifications thereof are disclosed wherein the novel construction includes an arrangement of at least one drawing panel and at least two support members for said drawing panel, all arranged for contact with the floor of the classroom, whereby each of these elements furnishes structural support for the remaining elements and each of the elements provide frictional contact with the floor of said classroom to stabilize said easel against movement by users. The elements may be made disengageable and collapsible in order to fold a given easel into substantially flat units.

3,692,274

VALVE FOR PNEUMATIC MOTOR

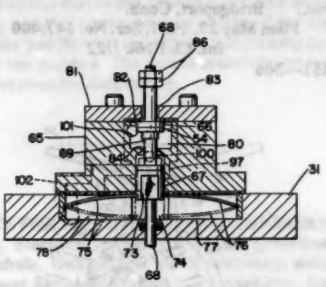
Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 809,235, March 21, 1969, Pat. No. 3,635,125. This application May 17, 1971, Ser. No. 143,812

Int. Cl. F16k *31/44*

U.S. Cl. 251—75 **2 Claims**

A hydraulic pump and double acting air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. A pilot valve operated by the air piston controls one operating valve for the cylinder and a pilot relay valve. The pilot relay valve controls another operating valve which is in reverse phase with respect to the first operating valve. The piston



operated pilot valve has a snap action feature so that the pilot valve, the pilot relay valve and the operating valves all reverse condition abruptly with a minimum dwell to provide a smoother power transmission.

3,692,275

LINE COUPLING CONNECTOR FOR RAILWAY VEHICLES

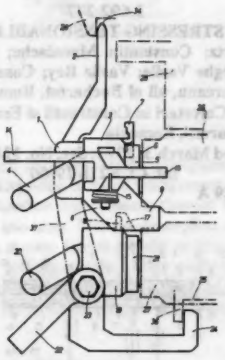
Pierre Baronnet, and Ernst Katzer, both of Munich, Germany, assignors to Knorr-Bremse KG, Berlin and Munich, Germany

Filed Jan. 27, 1971, Ser. No. 110,192

Claims priority, application Germany, Feb. 24, 1970, P 20 08 540.9

Int. Cl. F16k *51/00*

U.S. Cl. 251—149.2 **8 Claims**



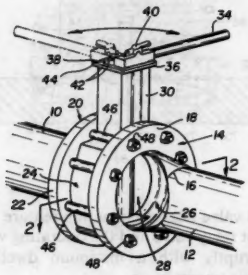
A coupling device is disclosed for coupling a line to a corresponding line on a railway vehicle equipped with either an automatic central buffer coupler or a manually operated box coupler. The device may be attached to the end of an air or stream line and comprises several retaining arms and a hook which are lockingly engageable with existing structure on both the automatic coupler and the manual coupler. The device is also provided with radial closure guides which are are spaced to correspond with the closure guides on a manual line coupler and which are positionable between guide flanges surrounding an air line opening on an automatic coupler. A further device is provided for coupling a second line to an automatic coupler with the second device having a radial extension received in a recess in the underside of the first device and a pivotable hook for lockingly engaging an abutment on the automatic coupler.

3,692,276

BUTTERFLY VALVE

John A. Conners, Fairfield; Donald W. Liepelt, Madison, and William H. Baulieu, Monroe, all of Conn., assignors to Jenkins Bros., Bridgeport, Conn.

Filed May 27, 1971, Ser. No. 147,400
Int. Cl. F16k 1/22
U.S. Cl. 251—306 **11 Claims**



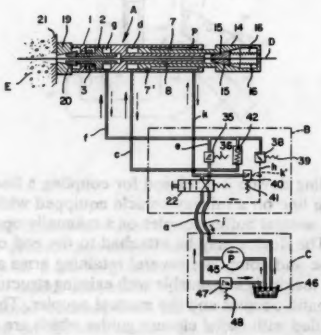
Butterfly valve assembly for installation in a pipe line between flanges. Assembly includes rigid tubular valve body and resilient valve seat insert to make tight seal with flanges when installed and to make tight seal with valve disc in service. Seat insert has certain dimensions undersize relative to valve body so that insert may be stretched when fitted to body and is further stretched when flanges are tightened during installation. Stretching assures secure fit between insert and body before installation and leak proof seal after installation. Seat insert and valve body have cooperating radial ledges asymmetrically located to prevent relative movement when valve disc is closed.

3,692,277

DEVICE FOR STRESSING TENSIONABLE ARMATURES

Robert Schwartz; Constantin Manolache; Marcel Tannenbaum; Gheorghe Vasile; Vasile Rey; Constantin Sima, and Aurel Cambureanu, all of Bucharest, Romania, assignors to Institutul de Cercetari in Constructii si Economia Constructilor, Bucuresti, Romania

Filed March 3, 1971, Ser. No. 120,556
Int. Cl. E21b 19/00
U.S. Cl. 254—29 A **10 Claims**



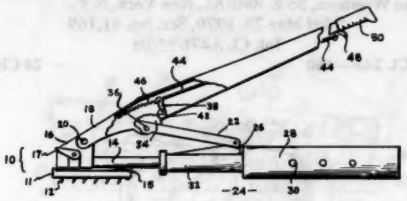
A tensionable armature passes axially through a jack comprising a hydraulic cylinder in which two pistons are slidable. The first piston projects from one extremity of the cylinder and carries a spring-loaded chuck for gripping the free end of the armature upon outward movement thereof, this piston being of the double-acting type and coacting with a fixed stem for positively disengaging the associated chuck from the armature upon inward retraction. The second piston, which is spring-loaded, bears upon another chuck at the opposite cylinder extremity on being urged outwardly against the spring force, thereby causing that chuck to hold the armature in its stressed position against the shell of a concrete casing. A distributor, comprising a set of four valves controlled by a common handle, has an operating position and a release position; in the former, an outward movement of the first piston to stress the armature is followed by a loading of the second piston to clamp the armature in place, whereas in the latter the first piston is retracted and the second piston is unloaded preparatorily to a new tensioning stroke.

3,692,278

CARPET STRETCHER WITH RATCHET HANDLE

Buford L. Payson, Garden Grove, Calif., assignor to Robert E. Strauss, Orange, Calif., a part interest

Continuation-in-part of Ser. No. 173,779, Aug. 23, 1971. This application Dec. 27, 1971, Ser. No. 212,127
Int. Cl. A47g 27/04
U.S. Cl. 254—62 **7 Claims**



A hand powered carpet stretcher is provided with the improvement of ratchet means carried by the stretcher handle to permit locking of the stretcher head at any of a plurality of extensions with remote actuation means to lock the ratchet so that the stretcher can be operated with a single handed motion. Positioning of the ratchet means in the handle of the stretcher permits a structure with minimum bulk and with a lever advantage of the ratchet mechanism which increases with increasing loading.

3,692,279

Patent Not Issued For This Number

3,692,280

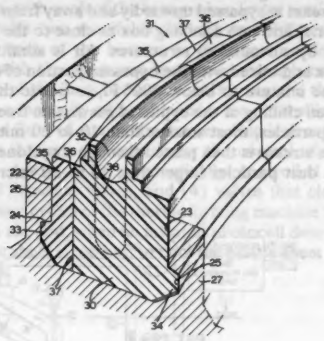
FASTENING OF TREADS TO DRIVE WHEEL OF FRICTION MINE HOIST

Peter De Hertel Eastcott, and William Herbert Jackson, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Jan. 29, 1971, Ser. No. 110,992
Claims priority, application Canada, April 14, 1970, 80031
Int. Cl. B66d 1/36
U.S. Cl. 254—190 **1 Claim**

A tread for the drive wheel of a friction mine hoist has an annular array of plastic blocks place end-to-end in a retaining groove on the periphery of the wheel. Each block has a small wedge-shaped piece split lengthwise off one side well to one side of the material under the rope, i.e., the rope wear material. During assembly of the blocks on the wheel, the small piece is placed in the groove first, after which the large piece is

driven lengthwise into place, narrowest end first, beside the small piece so as to wedge the two pieces in the groove as a



complete block. The sides of the groove may be undercut at the bottom thereof, and the blocks formed with shoulders that are wedged into the grooves.

3,692,281

NESTABLE TRAFFIC MARKER

George W. Clayton, 4059 S. Wisteria Way, Denver, Colo.

Filed Sept. 15, 1971, Ser. No. 180,605
Int. Cl. E01f 9/00
U.S. Cl. 256—64 4 Claims

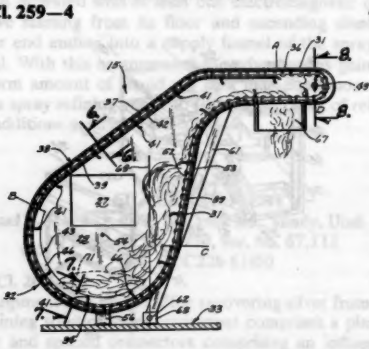
Traffic marker characterized by three members, each formed from a side wall and bead of a pneumatic tire, the members being hinged together for movement from a generally flat nesting relationship to an erect position.

3,692,282

MATERIAL MIXING AND CONVEYING APPARATUS

Harold D. Niblo, Redfield, Iowa

Filed July 15, 1970, Ser. No. 55,134
Int. Cl. B01f 5/26, 15/02
U.S. Cl. 259—4 4 Claims



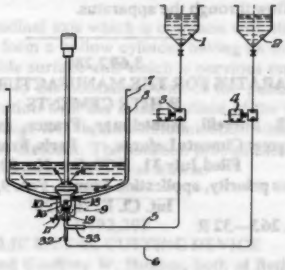
An endless conveyor of chain and paddle type is moved longitudinally of a trough member so as to travel in succession along a lower or material receiving section, an upwardly inclined or mixing section and a laterally extended delivery section. The materials supplied to the receiving station are conveyed to the mixing section where they are concurrently elevated and mixed due to the continuous falling downwardly from leading paddles of materials in excess of the conveying capacity of the paddles and the subsequent picking up of such materials by the paddles. The mixed materials are carried to the delivery section for distribution.

3,692,283

DEVICE FOR PREPARATION OF SUSPENSIONS

Theo Sauer, Starnberg; Rolf-Fred Posse, Leverkusen, and Gunter Schulz, Holzkirchen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 21, 1970, Ser. No. 100,275
Claims priority, application Germany, Dec. 20, 1969, P 19 63 919.1
Int. Cl. B01f 7/16
U.S. Cl. 259—24 10 Claims



Suspensions, such as silver halide containing suspensions, are prepared by disposing a basic component in a kettle or tank and adding further components thereto by means of a separating tube in the tank. The upper section of the tube has a conveyor with a motor driven paddle or the like, while the lower section has mixing nozzle valves each of which has a variably opening circular slot which opens by means of flow pressure overcoming pretensioning in the valves.

3,692,284

Patent Not Issued For This Number

3,692,285

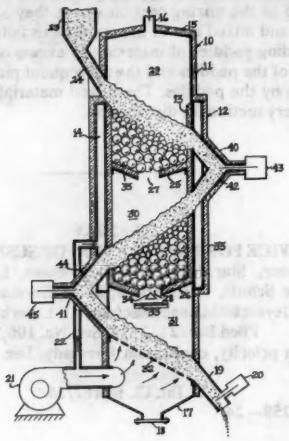
MULTI-STAGE CALCINER

Hazelton H. Avery, 1202 W. Galina Blvd., Aurora, Ill.

Filed Feb. 19, 1971, Ser. No. 116,999
Int. Cl. F27b 1/10
U.S. Cl. 263—30 8 Claims

A multi-stage apparatus for drying and hardening ion ore pellets as they flow over a high-temperature sloping grid and pass through separated pre-heating and pre-cooling full flow areas. The apparatus provides a drying stage separated by a

pre-heating area from the indurating stage that in turn is separated by a pre-cooling area from the cooling stage, with a



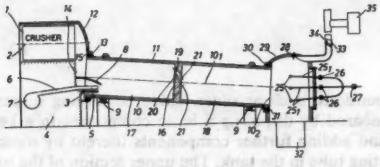
single directional flow of air forced longitudinally through each stage to sequentially dry, heat and cool the green pellets as they flow through the apparatus.

3,692,286

APPARATUS FOR THE MANUFACTURE OF SUPER-WHITE CEMENTS

Andre B. Borreill, Montelimar, France, assignor to Societe Anonyme: Ciments Lafarge, Paris, France

Filed July 31, 1970, Ser. No. 59,884
Claims priority, application France, Feb. 9, 1970, 7004502
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R **12 Claims**



Apparatus for manufacturing superwhite cement from clinker, comprises an inclined rotating drum divided by an apertured partition into upstream and downstream compartments, a crusher delivering hot clinker and nozzles delivering hot reducing gas into the outer end of the upstream chamber, spray nozzles to introduce water vapor into the outer end of the downstream chamber, and closures sealing the ends of the drum from the outside atmosphere.

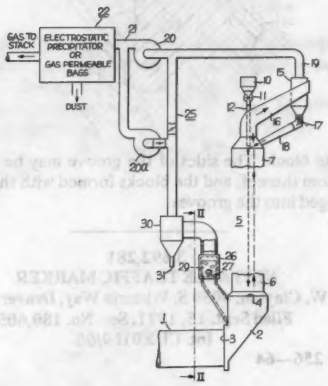
3,692,287

METHOD AND APPARATUS FOR REMOVING ALKALI FROM CEMENT SYSTEM

Robert F. Kohl, Shorewood, and Glenn A. Helan, Franklin, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 10, 1970, Ser. No. 96,776
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R **9 Claims**

A method and apparatus is disclosed for reducing the alkali content of cement clinker in which dust and volatilized alkalies are removed from hot clinkering kiln exit gases utilized to preheat particulate raw material. A stream of kiln exit gases at 1,800° F., with entrained dust and volatilized alkalies, are collected by a hood that turns the stream upwardly countercurrent to the falling feed material. A portion of the upwardly moving stream is bypassed upwardly and away from the falling feed material and into a mixing box as close to the hood as is permitted by surrounding structures. Air is admitted to the mixing box and mixed with the bypassed portion of the stream to chill the mixture to below 600° F., to freeze the alkalies. This sudden chilling of the bypassed gas stream freezes the alkalies to particles, most smaller than 10 to 20 microns. The chilled gas stream is then passed through a cyclone separator to collect dust particles larger than 10 to 20 microns and a



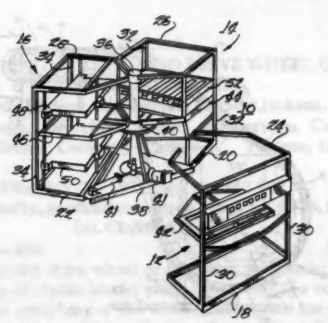
minor portion of the frozen alkalies. The gas stream is then passed through an electrostatic precipitator or a plurality of gas permeable bags to collect dust particles smaller than 10 to 20 microns and a major portion of the frozen alkalies. The bypassed portion of the gas stream from the hood to the mixing box passes through a conduit that tapers toward the mixing box, and the stream from the mixing box to the cyclone separator passes through a conduit that tapers away from the mixing box, to provide an increase in velocity of the gas to maintain the dust and frozen alkalies suspended in the gas. A ported cage is mounted within the mixing box to create turbulence and efficient mixing of the air and gas.

3,692,288

GAS-FIRED THERMOFORMING MACHINE

Robert E. Kostur, Oak Brook, Ill., assignor to Comet Industries, Inc., Bensenville, Ill.

Filed Dec. 24, 1970, Ser. No. 101,322
Int. Cl. F27b 3/00
U.S. Cl. 263—40 R **10 Claims**



To obtain a mixture of air and a combustible gas for burning, a first plurality of elongated infrared radiation gas burners

forming a bottom section and a second plurality of elongated parallel infrared radiation gas burners forming a top section of an oven of a thermoforming machine communicate with four manifolds, with each of the burners in a lower section communicating with two manifolds through two different gas lines and with each of the burners in the upper section communicating with the other two manifolds through two different lines, one of the lines between each burner and the manifold including a manually adjustable valve for controlling, within a range, the flow of gas to the burner. Gas is provided to the manifolds through gas lines under the control of (1) venturi type gas mixers; (2) automatically controlled regulating valves; (3) manual valves; and (4) valves that close the gas line between cycles of the thermoforming machine to clear the lines with air, and, when an infrared photocell determines that the plastic sheet is too hot, to cool the plastic sheet by blowing air upon it.

3,692,289

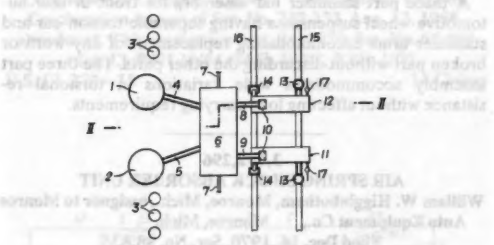
Patent Not Issued For This Number

3,692,290

PLANT FOR CONTINUOUSLY REFINING PIG IRON

Alois Hager, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Feb. 17, 1971, Ser. No. 116,087
Claims priority, application Austria, Feb. 20, 1970, 1556
Int. Cl. C21c 7/00
U.S. Cl. 266—13 **3 Claims**



The invention relates to a plant for continuously refining pig iron comprising a vessel for storing and keeping warm pig iron and a closed spray-refining vessel in which a gaseous refining agent is blown onto a falling pig iron stream and an about horizontal spraying cone is formed, in which the improvement resides in that the vessel for storing and keeping warm the pig iron is provided with at least one electromagnetic conveying groove starting from its floor and ascending slantingly, its upper end ending into a supply funnel of the spray refining vessel. With this arrangement the advantage is gained that a uniform amount of liquid pig iron may continuously be fed into a spray refining vessel so that the amounts of refining gas and additions need not be changed.

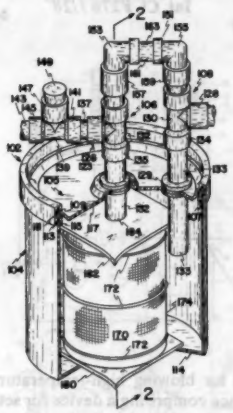
3,692,291

SILVER RECOVERY

Michael T. MacKay, 2489 E. Creek Rd., Sandy, Utah

Filed Aug. 26, 1970, Ser. No. 67,111
Int. Cl. C22b 61/00
U.S. Cl. 266—22 **7 Claims**

Equipment and methods for recovering silver from a silver-containing solution. The equipment comprises a plastic container and spaced connectors comprising an influent liquid passage and an effluent liquid passage. The connectors penetrate a lid which is sealed about the opening of the container in press-fit relation, with a sealant compound being disposed between the lid and container adjacent the press-fit. Elastomeric grommets, carried in apertures on the lid, create a seal and slip-fit with each of the two spaced connectors. A recovery element made of metal above silver in the electromotive force series fits within the container The metal-forming the element is arranged in a woven matrix, such as, for example, galvanized window screen, which is wound about itself



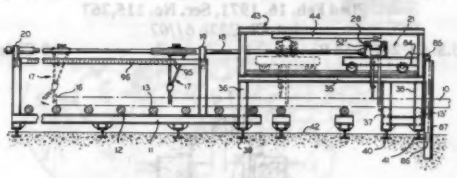
around its longitudinal axis which is common with the axis of the container to form a hollow cylinder having an inside surface and an outside surface and which is pervious only transversely in respect to the container. One of the passages is in liquid communication with the inside surface of the element, and the other passage is in liquid communication with the outside surface of the element. The solution precipitates silver in exchange for the metal of the woven matrix.

3,692,292

CYCLIC METAL CUTTING DEVICE

Joseph Rokop, and Geoffrey W. Hughes, both of Bethel Park, Pa., assignors to Pennsylvania Engineering Corporation

Filed Jan. 4, 1971, Ser. No. 103,643
Int. Cl. B23k 7/02
U.S. Cl. 266—23 K **12 Claims**



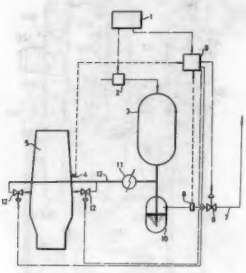
Cutting torches are actuated transversely to cut into discrete lengths a metal strand that is moving longitudinally. The torches are on a longitudinally movable main carriage. The leading end of an incoming continuous strand engages the carriage and advances it longitudinally at which time the torches are shifted transversely by a follower and cam arrangement so that the torches cut in a straight line across the strand. Feelers on transversely movable carriages engage the edges of the strand and correctly position the torches which are transversely movable between the edge feeler carriages. Cams influence the torches toward the center of the strand where their cutting paths overlap. When a cut is completed the feeler and torch carriages shift transversely and the main carriage is disengaged from the strand so that return of the main carriage restores the feeler and torch carriages to their initial position.

3,692,293

APPARATUS FOR BLOWING HIGH-TEMPERATURE REDUCING GAS INTO BLAST FURNACE

Yoshiaki Hara; Akio Masagaki, and Masaaki Iguchi, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed April 21, 1971, Ser. No. 136,073
Claims priority, application Japan, May 28, 1970, 45/45830
Int. Cl. F27b *1/28*
U.S. Cl. 266—29 2 Claims



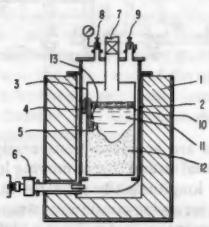
An apparatus for blowing high-temperature reducing gas into a blast furnace comprising a device for settling the supply amounts of raw materials such as hydrocarbons, a raw material controlling device to control the supply amounts of hydrocarbons, oxygen (or air) and steam to a cracking furnace according to the signal of said supply amount settling device, a furnace pressure gauge provided in the blast furnace, a cut-off valve for branch pipe gas, a pressure control valve provided in a reducing gas exhaust pipe line, a producer gas pressure gauge provided in an inlet pipe line of said pressure control valve, and an indicator controller to calculate and instruct the degree of opening of said pressure control valve according to the signals from said supply amount settling device, the furnace pressure gauge and the producer gas pressure gauge, and also calculate and instruct the opening and closing of the cut-off valve for branch pipe gas.

3,692,294

APPARATUS FOR PRODUCTION OF ZIRCONIUM METAL

Kazuhiko Ishimatsu, and Takao Nakahara, both of Tokyo, Japan, assignor to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1971, Ser. No. 115,267
Int. Cl. C22b *61/02*
U.S. Cl. 266—34 R 10 Claims



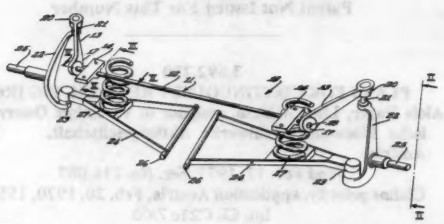
In an apparatus adapted for the production of zirconium metal, by the reduction of zirconium tetrachloride with metallic magnesium with magnesium chloride being formed as a by-product, comprising a reaction vessel provided with means allowing for the introduction of zirconium tetrachloride vapor into said reaction vessel, a pressure control valve and means allowing for the introduction to and exhaustion from said reaction vessel of a gas, and an outer vessel surrounding said reaction vessel defining an annular space therebetween, the improvement which comprises a first means communicating between the interior of said reaction vessel and said annular space allowing for the discharge of said by-product magnesium chloride from the interior of said reaction vessel to said annular space and a second means communicating between said annular space and outside of said outer vessel allowing for the discharge of said by-product magnesium chloride from said annular space.

3,692,295

TORSION BAR WHEEL SUSPENSION

Richard Cass, Birmingham, and Edward J. Herbenar, Detroit, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed May 25, 1970, Ser. No. 40,318
Int. Cl. B60g *11/18*; F16f *1/14*
U.S. Cl. 267—57 7 Claims



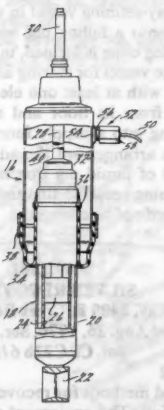
A three part stabilizer bar assembly for front or rear automotive wheel suspensions having separable torsion bar and stabilizer arms accommodating replacement of any worn or broken part without discarding the other parts. The three part assembly accommodates wide variations in torsional resistance without affecting load carrying requirements.

3,692,296

AIR SPRING SHOCK ABSORBER UNIT

William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.

Filed Dec. 16, 1970, Ser. No. 98,835
Int. Cl. F16f *5/00*
U.S. Cl. 267—65 29 Claims



An air spring shock absorber unit comprising, a hydraulic direct acting shock absorber, a generally cylindrically-shaped

enclosure member extending coaxially around the shock absorber, a flexible diaphragm member connected at one portion thereof to the shock absorber unit and at another portion thereof to the enclosure member and defining a pressurized gas chamber therewith, conduit means for communicating pressurized gas to the chamber through a passage formed in the enclosure member, a fitting assembly for attaching one end of the conduit to the enclosure member and comprising first and second threadably engageable members, the first member being of a generally cup-shaped configuration and including an annular resilient flange portion defining in part a bore adapted for reception of the conduit, the second member having an end portion adapted for engagement with the flange portion whereupon threadable engagement of the first and second members results in the flange portion being biased radially inwardly into tight engagement with the periphery of the conduit; the fitting assembly optionally being provided with a minimum pressure valve mechanism which is adapted to function in maintaining a preselected minimum pressure within the gas chamber of the associated shock absorber unit.

3,692,297

Patent Not Issued For This Number

3,692,298

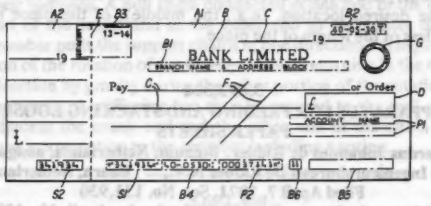
PRINTING OF CHEQUES

Jack Peacock, Wimborne, Dorset, England, assignor to McCorquodale & Company Limited, Basingstoke, England

Continuation-in-part of Ser. No. 752,233, Aug. 13, 1968, abandoned. This application Aug. 24, 1970, Ser. No. 66,304

Int. Cl. B41f *13/64*; B65h *39/02*; B30b *1/00*

U.S. Cl. 270—12 **14 Claims**



To permit inexpensive printing of individual check books containing personalised checks and other documents and flexibility in the order of such documents in the check book, the unvarying information and background pattern are bulk-printed on a web or on large sheets and the web or each sheet is then cut into individual checks The personalising and bank branch information, partly in machine-readable characters (e.g. in magnetic ink) is added by passing the separated checks and other documents through a high-speed printing machine capable of being rapidly reset. The checks travel in the direction of their lengths, permitting checks of different lengths to be accommodated, and pass through a quality monitor which can check each of a line of machine-readable characters added in the printing machine.

3,692,299

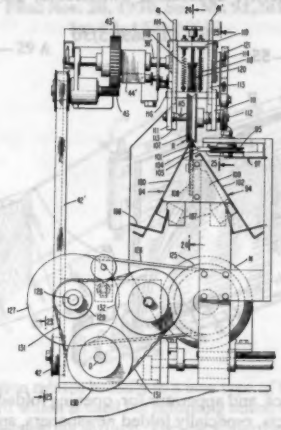
APPARATUS FOR CONVEYING AND TREATING FOLDED BOOK SIGNATURES AND THE LIKE

John O. McCahon, West Simsbury, Conn., and William J. Byrne, Pearl River, N.Y., assignors to Smyth Manufacturing Company, Bloomfield, Conn.

Division of Ser. No. 706,926, Feb. 20, 1968, Pat. No. 3,591,165. This application July 2, 1971, Ser. No. 159,226

Int. Cl. B56h *39/02*

U.S. Cl. 270—54 **13 Claims**



A pusher type saddle conveyor for folded book signatures and the like having means for compressing the backbone folds of the signatures.

3,692,300

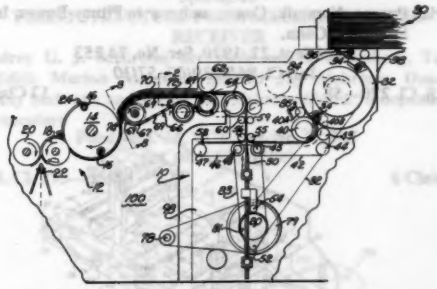
FEEDER AND FOLDER ARRANGEMENT FOR SIGNATURE GATHERING MACHINE

Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed March 2, 1971, Ser. No. 120,279

Int. Cl. B65h *5/30*

U.S. Cl. 270—55 **13 Claims**



A feeder folder unit for use with an inserter of the type having a rotary feed drum, a signature opening mechanism and a conveyor chain and wherein the feeder folder unit includes hopper means for supplying signatures in a horizontal position, rotary extractor drum for extracting these signatures from the hopper, transfer means for transferring extracted signatures from the rotary drum to a folder mechanism and transfer chain means for transferring the folded signatures in timed relation to the feed drum of the inserter. The feeder folder mechanism may be constructed as a separate unit but driven from the inserter drive and used with existing inserter

gatherers both to convert such gatherers from a vertical hopper feed to a horizontal hopper feed and to perform a fold operation during feeding of the signatures.

3,692,301

METHOD OF, AND APPARATUS FOR, OPENING FOLDED MULTI-SHEET PAPER PRODUCTS

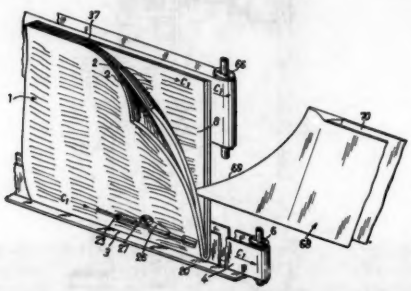
Jakob Wetter, Wetzikon, Switzerland, assignor to Ferag, Fehr & Reist AG

Filed July 13, 1971, Ser. No. 162,049

Claims priority, application Switzerland, July 21, 1970, 11051/70

Int. Cl. B65h *5/30*

U.S. Cl. 270—55 12 Claims



A method of, and apparatus for, opening folded, multi-sheet paper products, especially folded newspapers, specifically for the purpose of introducing an insert into the thus opened paper product, wherein a pressure is exerted at the region of the fold of the paper product, this pressure extending transverse to the plane of the product itself. As a result the sheets of the product located to one side of the fold are raised from the sheets located at the other side of the fold. In accordance with a preferred constructional embodiment of the invention there is provided a clamping member equipped with a pressure element and a counterelement, the printed product is introduced between these elements in order to carry out the product opening activity.

3,692,302

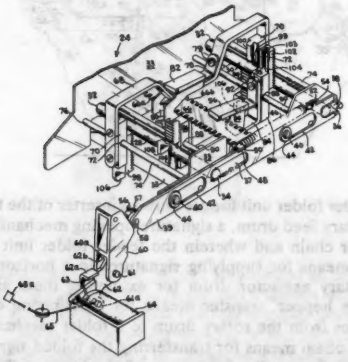
APPARATUS FOR INSERT TRAILING EDGE ALIGNMENT

Eriks Parups, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 22, 1970, Ser. No. 74,253

Int. Cl. B65b *39/02, 57/10*

U.S. Cl. 270—58 12 Claims



An envelope inserting machine includes a pair of insert feeding stations for delivery of inserts from each station successively along a path including a passageway formed by a frame spaced above a pick-up station and having an inlet and an outlet. Stop means are provided at predetermined distances from the inlet and are movably mounted in the frame toward and away from the pick-up station, each being operatively connected to a separate insert feeding station through actuating means, to move to an extended position for arresting the movement of an insert moving on the pick-up station from its corresponding insert feeding station and to move to a retracted position disposed out of the passageway, when the insert delivered is from another insert feeding station. The predetermined distance from the inlet at which the stop means are positioned being such that the inserts are stopped at the pick-up station in trailing edge alignment for subsequent insertion into an envelope.

3,692,303

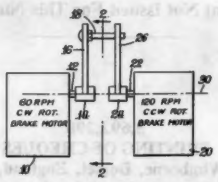
SENSING MEANS FOR FOLDER

Frederick W. Grantham, Los Angeles, Calif., assignor to Mecca Bros, Inc., North Collins, N.Y.

Filed July 23, 1971, Ser. No. 165,682

Int. Cl. B65h *45/00*

U.S. Cl. 270—61 12 Claims



A sensing device for folders that are adapted particularly to folding textile pieces and laundry pieces; in the folding operation in such a folder, the means first senses the leading edge of the piece to be folded and initiates a first and slow movement of sensing control, and then senses the trailing edge and initiates a second and fast movement of the sensing control, whereby the fast movement occurs for a longer or shorter period according to whether the piece is respectively shorter or longer, and thereby effects operation of the folding element at the desired location, (e.g., the middle), of the piece regardless of the length of the piece.

3,692,304

APPARATUS FOR FEEDING AND STACKING LOOSE PAPER SHEETS

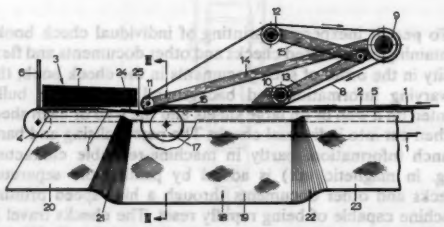
Gerardus Johannes de Ridder, Bussum, Netherlands, assignor to Ingenieursbureau De Ridder N.V., Baarn, Netherlands

Filed April 7, 1971, Ser. No. 131,930

Claims priority, application Netherlands, April 10, 1970, 7005222

Int. Cl. B65h *29/16, 31/00*

U.S. Cl. 271—75 6 Claims



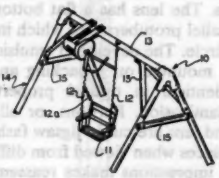
An apparatus for feeding and stacking loose paper sheets having a stacking station with an upstanding end stop for the

sheets to be stacked and a lower and upper endless conveyor belt for clamping the sheets to be stacked therebetween and feeding the sheets to the stacking station. The lower conveyor belt extends underneath the stacking station and the upper conveyor belt passes around a return roller arranged a small distance upstream of the stacking station. Side guide members are arranged on each side of the lower conveyor belt for supporting the side portions of the sheets which side guide members are inclined from the lower conveyor belt downwardly and outwardly whereby the sheets are bent in the transverse direction. The side guide members and the lower conveyor belt have portions extending obliquely upward in the direction of feed of the sheets from a point lying upstream of the forward or upstream side of the stacking station to a point lying under the stacking station whereby any sheet fed without being overlapped by the preceding sheet can be pushed without disturbance, and without damaging its front edge, under the stack formed at the stacking station.

3,692,305
POWERED SWING

Charles F. Allen, Camillus, N.Y., assignor to Frank H. Booth, Syracuse, N.Y., a part interest

Filed March 31, 1971, Ser. No. 129,783
Int. Cl. A63f *9/14*
U.S. Cl. 272—86 4 Claims

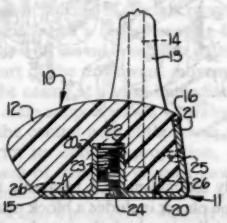


A chain-hung seat pendant from the top of a swing frame has a motor supported on the frame at the side of the top so that a crank keyed to its driven shaft rotates toward and away from a crossbar secured at its ends to the support chains near their top ends. A pull chain connected at one end to the outer end of the crank and at the other end to the center of the crossbar pulls the support chains in one direction during a portion of the rotation of the crank, the seat returning in the other direction by gravity during the other portion of the rotation of the crank. A stiffening bar may be secured to the pull chain adjacent the crank end and the other end of the chain may have a connection to the crossbar including a spring.

3,692,306
GOLF CLUB HAVING INTEGRALLY FORMED FACE AND SOLE PLATE WITH WEIGHT MEANS

Cecil C. Glover, P.O. Box 12705, Charlotte, N.C.

Filed Feb. 18, 1971, Ser. No. 116,460
Int. Cl. A63b *53/04, 53/02*
U.S. Cl. 273—80.7 5 Claims

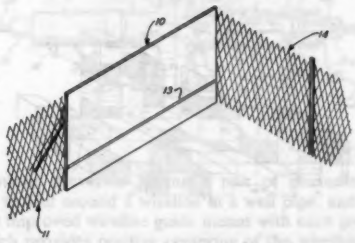


A golf club whose head is provided with a bracket having sole and face plates formed integral with each other and positioned against respective bottom sole and front face surfaces of the head, and wherein one or the other of the plates carries at least one inwardly projecting elongate tube which is embedded in the head, with weight means removably and adjustably secured in the tube.

3,692,307
LIVE ACTION BACKBOARD

Francis B. Henry, 58 Winding Lane, Basking Ridge, N.J.

Filed Nov. 20, 1970, Ser. No. 91,241
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A 12 Claims



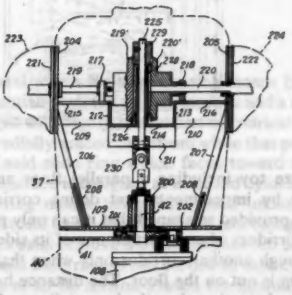
This invention relates broadly to a new type of backboard or practice board which is used for returning tennis balls or other balls played against its surface. The backboard is constructed of materials and is so designed as to give to the practicing player the impression that he is actually facing a competitor who appears on the surface of the backboard. The backboard is in part constructed of pictorial parallax panoramagram units which depict in depth one or more tennis players in various positions. The units are designed so that the depicted players appear to move when the practicing player changes position with respect to the backboard.

3,692,308
Patent Not Issued For This Number

3,692,309
TORSO STRUCTURE FOR A MECHANICAL PASS RECEIVER

Audrey G. J. Mehrens, deceased, late of Rosenberg, Tex., Edith Marion Mehrens; Ronald Jay Mehrans; Donald Ray Mehrans and Jackie Fay Mehrans Shuler, independent executors

Filed Sept. 24, 1970, Ser. No. 74,985
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R 6 Claims



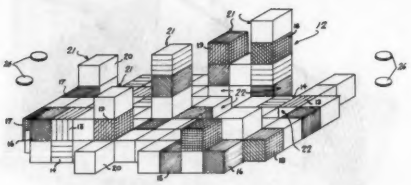
A torso structure for a simulated football player on a radio-controlled, motor-driven carriage. The torso structure has

pivoted arms. The torso is rotated by a motor and the arms are geared to a common non-rotating pinion gear so that the arms rotate in opposite directions responsive to the rotation of the torso.

3,692,310
BOARD GAME APPARATUS

Ernest B. W. Martin, General Delivery, Hearst, Ontario, Canada

Filed June 2, 1970, Ser. No. 42,831
Claims priority, application Canada, June 2, 1969, 053,219
Int. Cl. A63f 3/00
U.S. Cl. 273—131 AB 8 Claims

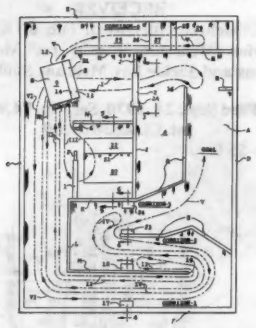


The present invention provides game apparatus which includes a playing surface comprised of a plurality of separate units. The units are each adapted for random assembly relative to the others whereby a playing surface of undetermined shape prior to commencement of a game may be formed therefrom. The units also are capable of manipulation into different mutual spatial relationships during a game in which the apparatus is used whereby the shape and arrangement of the playing surface can be altered; the units having value designation markings designating different respective values of said units, and at least two tokens positionable on any one of said game units.

3,692,311
MAZE TOY

Ronald W. Redo, 773 Blossom Way, Hayward, Calif.

Filed Aug. 9, 1971, Ser. No. 170,056
Int. Cl. A63f 9/14, 9/06
U.S. Cl. 273—153 R 3 Claims

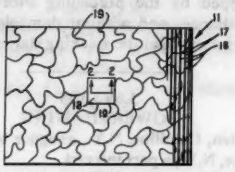


A maze toy including a parallel floor and cover joined together by impediments that define corridors therein. A token is provided so shaped that it can only pass through one of the corridors when a certain one of its sides is on the floor and through another corridor only when that certain side of the token is not on the floor. The distance between the floor and cover being less than the largest diagonal of token height and width, and thereby preventing rotation of the token from a position with one side on the floor to a position with another token side thereon. A recessed area is provided adjacent to the floor where there is adequate space for the token to rotate from one side onto another. The user must determine a series of corridors and also when and how to enter a recessed area for changing the side on which the token travels.

3,692,312
METHOD OF FABRICATING PICTURE PUZZLE AND PUZZLE PRODUCED THEREBY

Alvin Meyer, 1690 Woodside Rd., Redwood City, Calif.

Filed Jan. 15, 1971, Ser. No. 106,847
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R 12 Claims



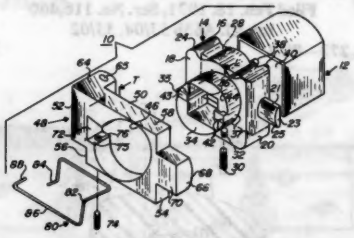
A jigsaw type picture puzzle is produced by first forming a surface illusion on at least a portion of a picture by exposing a photographic emulsion through a specific type lens from at least two angles. The lens has a flat bottom and a top contoured with parallel protuberances which in cross-section are segments of a circle. The developed emulsion, or a reproduction thereof, is mounted on a backing and covered with a second lens identical in optical properties to the first, preferably by lamination. Portions, or all, of the backing, reproduction and lens are cut in jigsaw fashion. The fact that the individual pieces when viewed from different angles given different visual impressions makes reassembly of the puzzle more challenging. Alternatively, the surface illusion portions of the puzzle may be inserted as plugs in pockets formed in the conventional puzzle.

3,692,313
Patent Not Issued For This Number

3,692,314
MOUNTING ARRANGEMENT FOR MAGNETIC TAPE HEAD

Donald J. Dattilo, Mt. Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed April 1, 1971, Ser. No. 130,350
Int. Cl. G11b 21/08
U.S. Cl. 274—4 A 8 Claims



An assembly for mounting a magnetic tape head in a cartridge type tape player includes a block mountable for vertical movement, a collar to which the tape head is fixedly mounted joined to the mounting block for rotational movement with respect thereto and a retainer spring connected to the collar to

secure the collar to the block. An adjustment screw extends through the block into engagement with a tab on the collar for rotating the collar against or in the direction of a biasing force also provided by the retainer spring, to position the collar including the tape head, rotationally with respect to the block.

3,692,315

UMBRELLA SPINDLES FOR AUTOMATIC DISC CHANGING PHONOGRAPHS

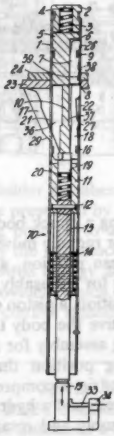
Kenneth Charles Goulding, Plymouth, England, assignor to The Magnavox Electronics Company Limited, Barking, Essex, England

Filed March 17, 1971, Ser. No. 125,228

Claims priority, application Great Britain, March 17, 1970, 12852/70

Int. Cl. G11b *17/04*

U.S. Cl. 274—10 S **11 Claims**



A spindle of the umbrella type for use in an automatic disc changing phonograph has a number of main record support pawls spaced angularly around the spindle axis and movable between record supporting positions in which they project upwards and outwards through slots in the spindle casing and record release positions in which they are retracted downwards and inwards in response to movement of an upwardly and downwardly movable push rod within the casing. In operation the push rod is moved by the change cycle mechanism of the phonograph. The spindle also includes a number of secondary support pawls which are actuated as the main support pawls are moved downwards towards their release position so as to engage and support records above the lower most record in a stack on the spindle. Thus, when the main support pawls reach their record release positions the lower most record alone is allowed to fall down the spindle, the rest of the stack remaining supported on the secondary support pawls. In order to detect when no further records remain on the spindle so that the change cycle mechanism can be caused to stop after playing of the last record is complete, the spindle is provided with a record sensing finger which is movable downwards with the main support pawls and is biased so that during a part of the downward movement it projects through a slot in the casing at a level immediately above that of the tops of the main support pawls whereby, in use, it engages the edge of the central hole of the lower most record in the stack to restrict its outward projection, but which on downward movement of the main support pawls when there are no records remaining supported on the spindle projects further from the slot into a position in which it engages a fixed part of the spindle and prevents further downward movement on the support pawls and their inward retraction, thus preventing the full cycle of operations of the spindle from taking place.

3,692,316

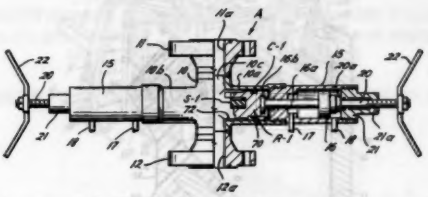
WIRELINE BLOWOUT PREVENTER

Thomas R. Bishop, and Archie W. Peil, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Dec. 21, 1970, Ser. No. 99,914

Int. Cl. B65d *53/00*

U.S. Cl. 277—73 **8 Claims**



A blowout preventer having a pair of preventer rams adapted to seal around a wireline in a well pipe, and having new and improved wireline guide means with each preventer ram which provides positive centering of the wireline as the rams move towards each other. Also, the guide means is strengthened as compared to the prior art and it eliminates inadvertent shearing of the wireline by the guide means as the rams move towards each other to the sealing position.

3,692,317

SLIDE RING SEAL

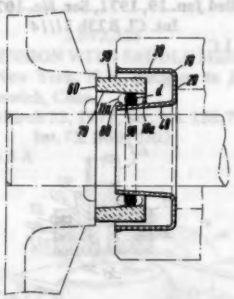
Gustav Augustin, Heilbronn, Germany, assignor to Kupfer-Asbest-Co. Gustav Bach, Heilbronn, Germany

Filed Sept. 24, 1970, Ser. No. 74,982

Claims priority, application Germany, Sept. 25, 1969, P 19 48 502.0; Sept. 25, 1969, P 19 48 501.9; Sept. 25, 1969, P 19 48 499.2

Int. Cl. F16j *15/34*

U.S. Cl. 277—81 **12 Claims**

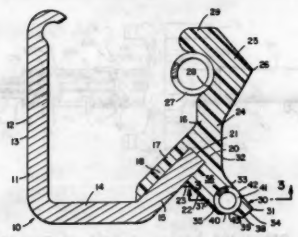


A slide ring seal which includes housing means having an inner first substantially cylindrical wall surface and a slide ring coaxially arranged with regard to said first cylindrical wall surface and being radially spaced therefrom while that peripheral wall surface of said slide ring which faces toward said first cylindrical wall surface is designed as a second cylindrical surface, elastic O-ring means being interposed under preload between said first and second wall surfaces and being adapted in response to an axial relative movement between said housing means and said slide ring to roll on one of said cylindrical wall surfaces so as to be torsion loaded for maintaining the slide ring in sealing engagement with a surface engaged by said slide ring when said O-ring means is under torsion load.

3,692,318
DUAL-LIP SHAFT SEAL WITH SPRING URGED AUXILIARY LIP

Frank A. Day, Farmington, and James A. Repella, Madison Heights, both of Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,719
Int. Cl. F16J 15/32
U.S. Cl. 277—164 5 Claims

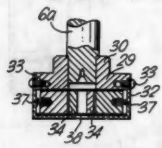


A dual-lip radial shaft seal having a primary oil-sealing lip urged against the shaft by a free garter spring and provided with a novel auxiliary dust-sealing lip spaced from the primary lip and serving to exclude dust. This auxiliary lip is urged into engagement with the shaft by a garter spring stretched from its rest position and incorporated into the lip itself so that it lies tangent to the opposite sides of the auxiliary lip. This stretched garter spring in the auxiliary lip makes it possible to obtain better dirt exclusion at a location where it would be substantially impossible to provide an exposed garter spring and where such a garter spring, if used, would corrode unless made of expensive noncorrodible material.

3,692,319
ROTARY TOOL DRIVE MEMBER

Cecil Isaac Taylor, 23 Poplars Rd., Buckingham, England

Filed Jan. 19, 1971, Ser. No. 107,664
Int. Cl. B23b 31/14
U.S. Cl. 279—1 C 3 Claims

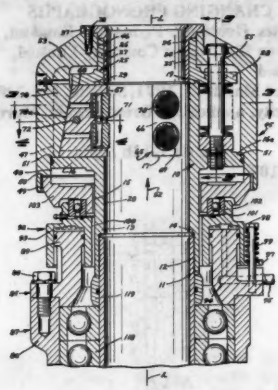


A rotary tool drive member for laps or like tools having opposite flats formed on their shanks in which two opposed tool drive elements are carried in a groove formed in a rotatable circular block, each tool drive element having a tool engaging surface on one side of the rotational axis and a centrifugal weight on the other side of the rotational axis, and springs urge the centrifugal weights towards the axis, the tool engaging surfaces being separated to the maximum extent when the tool drive member is stationary and being moved towards each other to engage the flats on a tool when the centrifugal weights move apart under the influence of centrifugal force during rotation.

3,692,320
CHUCK APPARATUS

Leonard A. Lindelof, and Albert L. Linn, both of Minneapolis, Minn., assignors to E. J. Longyear Company, Minneapolis, Minn.

Filed Oct. 19, 1970, Ser. No. 81,697
Int. Cl. B23b 5/22
U.S. Cl. 279—4 22 Claims

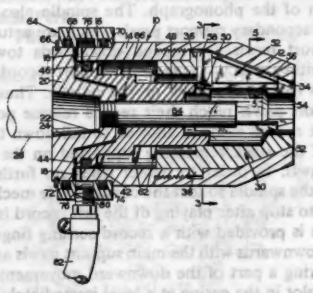


A chuck assembly having a chuck body that mounts a plurality of jaw assemblies for radially movement between a rod clamping and a rod release position, a chuck hood axially movable relative the body for releasably retaining the jaw assemblies in a clamping position, a piston cylinder combination for moving the hood relative the body to a jaw release position, and a spring loading assembly for resiliently urging the hood to a jaw clamping position that includes resilient mechanism that is retained in a compressed condition even though the hood is removed; and a hydraulic swivel head for mounting the chuck assembly and rotating the chuck body relative the hood.

3,692,321
PNEUMATIC TOOL HOLDER

Chauncey H. Shattuck, Gresham, Oreg., assignor to Richard L. Alexander, Gresham, Oreg., a part interest

Filed April 26, 1971, Ser. No. 137,559
Int. Cl. B23b 31/30
U.S. Cl. 279—4 5 Claims



A pneumatic tool holder comprises a hollow, cylindrical case having a tapered, open nose. Mounted within the case are a hollow finger guide having radially spaced longitudinal guide slots receiving a plurality of grip fingers, and a piston to which the fingers are connected. A sleeve mounted for free rotation on the case connects to a compressed air source and communicates through a port with the interior of the case, behind the

piston. Compressed air introduced into the case drives the piston in a first direction. Spring means mounted within the case drive the piston in the reverse direction. This alternately advances and retracts the fingers into tool-gripping and tool-releasing positions, respectively.

3,692,322

TOE- OR HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS

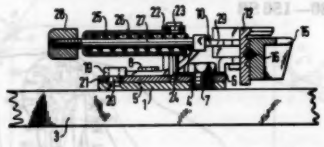
Hans Otto Frisch, and Bernd Payrhammer, both of 8105 Farchant, Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed May 18, 1970, Ser. No. 38,053

Claims priority, application Germany, July 4, 1969, P 19 34 060.4

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T 5 Claims



At least one soleholder member is automatically movable against the resistance presented by at least one resistance element from a locking position to a release position. The resistance presented by the resistance element or elements is a function of the potential energy and kinetic energy. A final control element is provided, which controls the resistance element in response to control signals depending on the kinetic energy.

3,692,323

BABY CARRIAGE

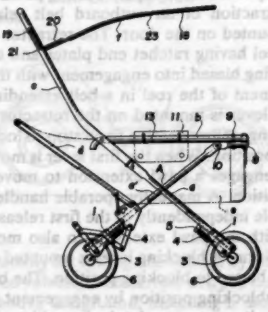
Shinichi Sekine, 35-31 Shinkawa 6-chome, Mitaka-shi, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 83,081

Claims priority, application Japan, April 13, 1970, 45/31427; April 17, 1970, 45/37389

Int. Cl. B62b *11/00*

U.S. Cl. 280—47.38 3 Claims



A baby carriage with a lower section to hold wheels thereon, a pair of tubes extending transversely across the width of the baby carriage with a separate wheel axle for each wheel journaled therein including holding means holding said wheel axles in said tubes, an outer section on said wheel axles having wheels thereon, a pulling piece on said outer section with a spring connected thereto and spring support means on said lower section to which said spring is connected whereby each of said wheels is separately provided with a shock absorbing arrangement.

3,692,324

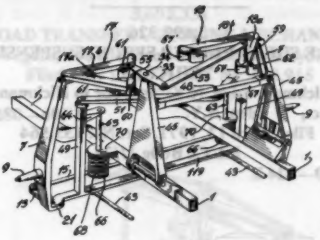
AUTOMOBILE SUSPENSION

Paul Corbin, 7737 St. Denis St., Montreal, Quebec, Canada

Filed Jan. 29, 1971, Ser. No. 110,815

Int. Cl. B60p *1/00*

U.S. Cl. 280—96.2 R 10 Claims



A suspension for a motor vehicle, namely an automobile, having a body and a pair of upstanding steering knuckles on either side of the body with a wheel mounted for steering on each knuckle intermediate its ends. A pair of suspension members extends transversely of the body in the direction of one another, each member being pivoted at one end to the top of the steering knuckles and pivoted at the other end to the body, above its center of gravity. A rigid axle bar is articulated at its ends to the lower ends of the knuckles to keep them apart a predetermined distance so that swaying of the body as in a curve may cause banking of the knuckles and wheels toward the center of the curve. A lateral stabilization yoke formed of a pair of side legs and a bight has the ends of its legs connected to the axle bar. A pair of spring units are each connected at one end to the suspension members or to the yoke and to the body so as to transfer the weight of the body to the steering knuckles. A sway motion compensating lever is mounted for rotation about an axis extending through the center thereof and is connected, by means of levers, to the bight of the yoke and to the body, these levers being so arranged that swaying motion of the body relative to the bight causes rotation of the compensating lever about its axis whereby to allow the swaying motion of the body.

3,692,325

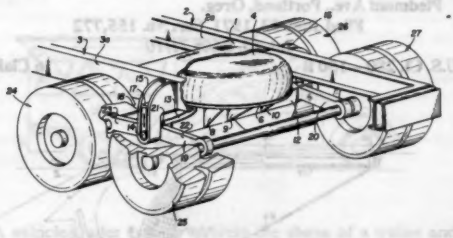
AIR SUSPENSION WITH SADDLE MEMBERS

Rene Gouirand, New York, N.Y., assignor to Joseph Mercadante, Greenwich, Conn.

Filed March 22, 1971, Ser. No. 126,793

Int. Cl. B60g *5/02*

U.S. Cl. 280—104.5 A 27 Claims



A vehicle air suspension system having an air bag located between upper and lower plate-like members further includes a pair of saddle members coupled to the vehicle adjacent each side of the air bag and fixed relative to the upper plate-like member. Each saddle member has a substantially vertically oriented slot-like opening therein through which a pivot shaft extends in the transverse direction of the vehicle. The pivot

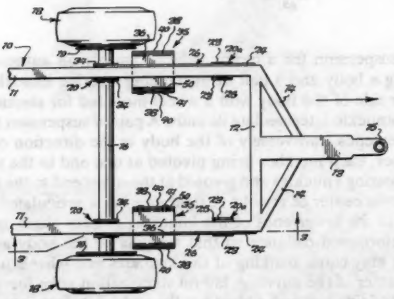
shaft is fixedly connected to the lower plate-like member and is slidably engaged in the slot-like openings of the saddle for movement in the vertical direction. Rocker arms are rotatably coupled adjacent the ends of the pivot shaft and vehicle wheels are coupled to the ends of the rocker arms. The saddle members substantially restrain the pivot shaft against movement in the longitudinal or lateral direction of the vehicle.

3,692,326

FULL AXLE SHEAR RUBBER SPRING SUSPENSION FOR VEHICLES

Albert F. Hickman, Eden, N.Y., assignor to Hickman Developments, Inc., Eden, N.Y.

Filed April 13, 1971, Ser. No. 133,564
Int. Cl. B60g *11/24*
U.S. Cl. 280—124 R **6 Claims**



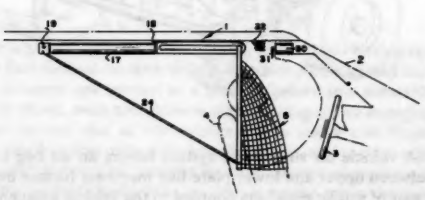
A full or through axle supported by rubber tired wheels has each end connected through a bearing to one end of a link extending lengthwise of the line of travel. The opposite link end is connected through another bearing to the frame. Each such bearing is constructed, as by inclusion of a flexible rubber bushing, to permit oscillation of the parts connected thereby about its center. Axial movement of the axle laterally of the line of travel is inhibited by rectilinear upright movement shear rubber bodies between the links and frame, these bodies being mounted for this purpose so that their faces fixed, respectively, to their links and the frame, are generally parallel with the line of travel and are upright. These bodies have the added function of providing the resilient support for the frame on the links.

3,692,327

PASSENGER EMBRACING SAFETY NETS FOR USE WITH AUTOMOTIVE VEHICLES

Thomas W. Barrick, Sr., and Billie L. Barrick, both of 737 Piedmont Ave., Portland, Oreg.

Filed June 23, 1971, Ser. No. 155,772
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 B **6 Claims**



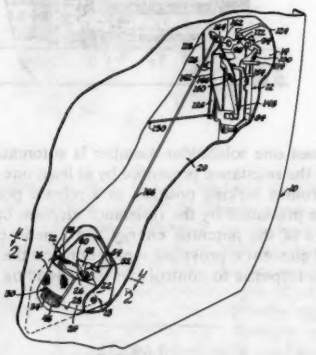
A generally rectangular restraining member or members for occupants of the front and/or rear seats of a passenger vehicle. Each restraining member comprises a frame, including a protective curtain, preferably pivotally attached to the underside of the roof of a vehicle and so arranged that on sudden deceleration of vehicle momentum or at the moment of collision impact, said restraining members will be unlatched from their normal overhead positions and automatically swung downwardly to draw the protective curtain or screens into body embracing engagement to hold the passenger safely against forward thrust and injurious impact with the windshield.

3,692,328

CONTROL MEANS FOR OCCUPANT RESTRAINT BELT RETRACTOR

Alfonsas Arlauskas, Troy, and Lloyd W. Rogers, Jr., East Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1971, Ser. No. 145,797
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **4 Claims**



A vehicle body includes a door movable between open and closed positions and mounting a door lock engageable with a striker on the body for holding the door in closed position. The lock is of the uncoupling type and includes inside and outside release handles connected to an operating lever which is selectively coupled to and uncoupled from the detent for the lock bolt. A restraint belt includes lap and shoulder belts which are moved between restrained and unrestrained positions with respect to an occupant seating position upon extension and retraction of an outboard belt relative to a belt retractor mounted on the door. The retractor includes a belt anchoring reel having ratchet end plates and a pawl which is normally spring biased into engagement with the end plates to block movement of the reel in a belt extending direction. A first release lever is mounted on the retractor and resiliently biased into engagement with a fixed stop to locate the lever in unactuated position. When the first lever is moved to actuated position, it engages a pawl extension to move the pawl into released position. A manually operable handle on the retractor is movable independently of the first release lever into engagement with the pawl extension to also move the pawl to released position. A blocking lever is mounted on the lock and is resiliently biased to blocking position. The blocking lever is moved to unblocking position by engagement with the striker when the bolt moves to latched position in engagement therewith. A second release lever is mounted on the lock for movement transversely of the path of movement of the blocking lever. A rod connects the first and second levers for simultaneous movement to thereby normally locate the second lever in unactuated position wherein it is engageable by the lock operating lever. When either release handle is operated and the lock operating lever is uncoupled from the detent, the lock operating lever moves the second release lever to actuated position transverse of the path of the blocking lever and likewise moves the first lever to actuated

position to release the pawl. When the release handle is released, the first and second levers return to unactuated position. When the lock operating lever is coupled to the detent, movement thereof by a release lever releases the pawl and also releases the lock bolt from the striker. The initial opening movement of the door permits the blocking lever to move to blocking position in the path of the second release lever and block return movement thereof and of the first lever to unactuated position when the release handle is released. The pawl thus remains released while the door is open.

3,692,329

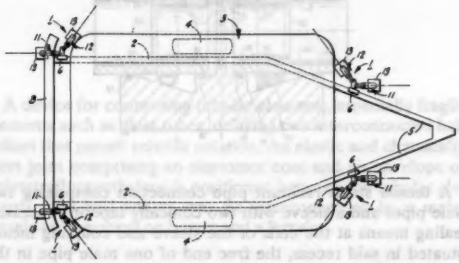
STABILIZING UNITS FOR PARKED VEHICLES

Tom E. Conner, P.O. Drawer BB, Elk Grove, Calif.

Filed Jan. 4, 1971, Ser. No. 103,517

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **2 Claims**



A plurality of stabilizing units are detachably mounted on a parked vehicle—such as a house trailer or mobile home—in predetermined spaced relation thereon and serve to stabilize the vehicle against both longitudinal and lateral rocking motion; each such unit, which is in the nature of a stand, including a pair of downwardly divergent legs which are manually adjustable in length in order to place the same under load between the vehicle and a ground-engaging pad attached to the lower end of each of said legs.

3,692,330

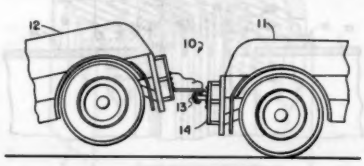
VERTICALLY ADJUSTABLE TWO BAR ASSEMBLY

Ray E. Kendall, Box 1042, Alamogordo, N. Mex.

Filed June 11, 1971, Ser. No. 152,234

Int. Cl. B60p *3/06*

U.S. Cl. 280—402 **11 Claims**



A tow bar assembly for towing one vehicle by another which enables the towed vehicle to be carried at a pre-determined or desired height above the ground, including a mounting plate having affixed thereto outwardly extending L-shaped brackets, each having a plurality of equally sized and spaced holes formed along a surface parallel to the surface of the mounting plate. A first wedge having a plurality of pins extending from it to engage selected ones of the holes in the brackets is provided together with a second wedge to maintain the interfitting engagement relationship of the pins in the holes, the second wedge jamming between the first wedge and the mounting plate. A tow bar, including a socket to receive a towing ball carried by a second vehicle, is mounted on the first wedge extending in the general direction of the pins, but is mounted at an angle with respect to a perpendicular to the surface of the first wedge of between about 5° and 25°, to enable the tow bar to be disposed substantially parallel to the ground when in connection with the towing ball, but enabling the towed vehicle to be carried at a desired height off the ground.

3,692,331

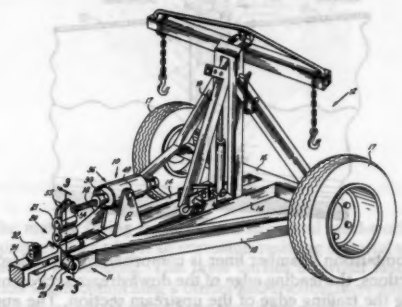
LOAD TRANSFER COUPLING MECHANISM

Lester S. Vegors, 300 E. Second St., Webster City, Iowa

Filed May 13, 1971, Ser. No. 142,915

Int. Cl. B62d *53/00*

U.S. Cl. 280—405 R **6 Claims**



The coupling mechanism includes a mounting bracket supported on the trailer tongue for pivotal movement along a transverse axis; and a coupling member having a rear and section supported on the bracket for pivotal movement about a longitudinal axis; and a front end section connected to the tractor vehicle for pivotal movement about a vertical axis. A spring loaded linearly adjustable unit pivotally interconnected between the bracket and tongue structure is selectively adjustable to pivotally move the bracket in either direction about the transverse axis therefor concurrently with providing for the application or removal of a load from the tongue structure to vary the distribution of the trailer and tractor loads.

3,692,332

VEHICLE DRAWN TRAILER SYSTEM

Angel Betancourt Pappatheodoru, Guanajuato 183-203, Mexico City, Mexico

Filed May 22, 1970, Ser. No. 39,747

Claims priority, application Mexico, Jan. 19, 1970, 116717

Int. Cl. B62d *53/00*

U.S. Cl. 280—423 R **6 Claims**

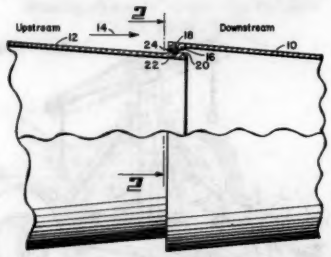
A vehicle/trailer system wherein the shape of a trailer and the position at which the trailer is connected to a powered vehicle cooperate to allow unrestricted horizontal pivotal movement of the vehicle relative to the trailer when the two are connected together. A rigid hitch means, including a spherical member cooperable with a socket member, connectable to the roof portion of the vehicle along each side thereof is also disclosed.

3,692,333
Patent Not Issued For This Number

3,692,334
COMBUSTION LINER ASSEMBLY

Brian W. Doyle, Shelton; Joseph Rygelis, Monroe, and Ervin J. Sweet, Trumbull, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,447
Int. Cl. F16l 37/14, 53/00
U.S. Cl. 285—41 **4 Claims**



A combustion chamber liner is comprised of two telescoping sections, the leading edge of the downstream section overlapping the trailing edge of the upstream section. The end of the downstream section is provided with a plurality of peripherally spaced inwardly directed bosses. The inner peripheral surface of each of the bosses is grooved to accept a metal ring. The end of the upstream section is provided with a peripherally stepped surface having a groove which in the assembled position of the liner is opposed to the groove in the spaced bosses. The two telescoping sections are joined by threading a wire locking ring into the grooves through a tangential opening. The wire ring serves to prevent movement between the sections. When cool, the dimensions of the upstream and downstream sections are such that there is a loose connection between the sections. However, the upstream section is subjected to more heat than the downstream section, causing it to expand to provide a tight fit

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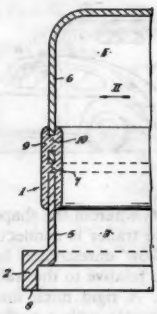
3,692,335
COVERS AND DUCTS FOR MACHINERY

John Vickers, 64 Cleveland Ave., and John K. Vickers, 3 Mowden Walk, both of Darlington, England

Filed May 3, 1968, Ser. No. 726,421
Claims priority, application Great Britain, May 4, 1967, 20,826/67
Int. Cl. F16l 55/02
U.S. Cl. 285—49 **4 Claims**

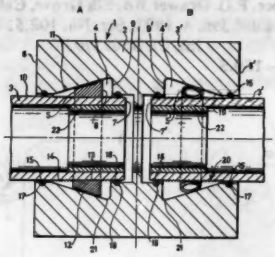


The specification describes adapted to provide machinery covers and parts thereof including engine covers for internal combustion engines in vehicles and aeroplanes. The members are constructed in two parts with a resilient material interposed to minimize vibration and vibratory noise caused by operation of the machinery.

3,692,336
PIPE CONSTRUCTION

Cornelis Van Zon, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Oct. 27, 1970, Ser. No. 84,417
Int. Cl. F16l 21/08
U.S. Cl. 285—175 **8 Claims**

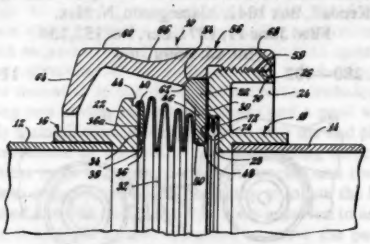


A tensile stress resistant pipe connection comprising two male pipes and a sleeve with two conically tapering recesses, sealing means at the ends of the sleeve and coupling means situated in said recess, the free end of one male pipe in the recesses being provided with left hand screw thread, a free end of the other one with right hand screw thread of about the same pitch.

3,692,337
FLEXIBLE COUPLING

Howard T. Mischel, San Diego, Calif., assignor to AVICA Corporation, Middletown, R.I.

Continuation-in-part of Ser. No. 822,958, May 8, 1969, Pat. No. 3,574,354. This application Sept. 4, 1970, Ser. No. 69,660
Int. Cl. F16l 27/10
U.S. Cl. 285—226 **10 Claims**

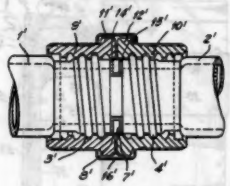


The disclosed flexible coupling is joining sections of rigid conduit, with provision for angular, axial and lateral flexiblity, and static sealing against fluid leakage. The conduit sections are interconnected by a tubular metal bellows which has the shape of a truncated cone for applications requiring increase fatigue life. The bellows is secured to ferrules either welded or swaged to the conduit ends. An E-seal, O-ring or similar seal is provided in a recess in one ferrule abutting the end of the metal bellows to provide a sealing means which does not flex despite lateral, axial and angular flexure of the bellows. The bellows is secured to the respective ferrules by a coupling nut at one end and by welding at the other end. In an alternate embodiment the said other end of the bellows is swaged in place between the ferrule and the conduit section.

3,692,338
CONNECTOR FOR TUBULAR ELEMENTS

Didier P. Nick, Nanterre, France, assignor to societe des Verreries Industrielles Reunies du Loing, Perret, France

Filed Dec. 17, 1969, Ser. No. 885,768
Claims priority, application France, Dec. 18, 1968, 68178801
Int. Cl. F16l 27/00
U.S. Cl. 285—272 4 Claims



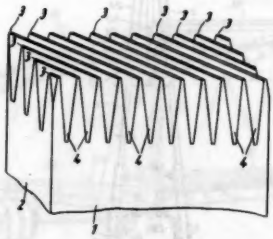
A device for connecting tubular elements, especially fragile elements such as glass tubes, utilizing two interconnected half collars that permit relative rotation. An elastic and chemically inert joint comprising an elastomer core and an envelope of polytetrafluoroethylene is positioned between the tubular elements. The half collars may be interconnected by a male-female arrangement on bosses and a ferrule.

3,692,339
Patent Not Issued For This Number

3,692,340
FINGER JOINT FOR JOINTING BOARDS, BATTENS, PLANKS, AND OTHER COMPARABLE BODIES

Ahti Aadolf Roth, Runonlaulajatie 50, Helsinki 42, Finland

Filed April 9, 1970, Ser. No. 26,870
Int. Cl. F16b 7/00
U.S. Cl. 287—20.92 T 4 Claims

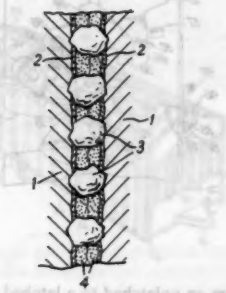


This invention relates to a novel finger joint for joining butt ends of timber, boards, planks and the like. Conventional finger joints have their fingers and notches extending transversely at right angles to two parallel side walls in the timber or plank. This means that at the juncture of a finger tip with a notch bottom that the effective glue surface is only equivalent to the width of the timer or plank. By making the fingers and notches diagonal to the two parallel side walls, the glue surface between contacting finger tips and notch bottoms is greatly increased thereby improving the strength characteristics of the jointed pieces.

3,692,341
BOLTED-UP FRICTION JOINTS IN STRUCTURAL STEEL-WORK

Kenneth G. Wynne Brown, Anchor House, Longcross Road, Chertsey, and Keith Julyan Day, 19, Treemount Court, Grove Ave., Epsom, both of Surrey, England

Filed March 2, 1970, Ser. No. 15,789
Int. Cl. F16b 5/00
U.S. Cl. 287—189.36 F 12 Claims



The mating faying surfaces in a structural steel-work joint are protected by a layer of corrosion-resisting material such as primer or galvanizing. This layer carries a further layer of a friction agent comprising a binder and friction-increasing particles such as grit or amorphous aluminum particles.

Both layers can be works-applied for greater reliability and consistency. The joint can be dismantled and reassembled without difficulty. The layer of corrosive-resisting material will be applied as an all-over protective layer for complete steel works components after cleaning off mill-scale.

3,692,342
CONTAINER POST LOCKING MEMBER

John Patrick Scallan, 84 Killarney Drive, Killarney Heights, New S. Wales, Australia

Filed Aug. 31, 1970, Ser. No. 68,335
Claims priority, application Australia, Sept. 3, 1969, 60461/69
Int. Cl. E05c 7/04
U.S. Cl. 292—128 7 Claims

A knock-down container has its walls, cover and base readily detachable from each other. The walls fit into the base and are locked in an upright position by a latch which pivots near one of its ends about a point in a recessed portion of the upper edge of a wall. The other end of the latch projects beyond the vertical edge of the wall on which it is pivoted and fits into a recessed portion in the top edge of an adjacent wall to lock the adjacent walls together at the corner.

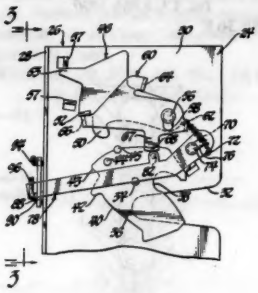
3,692,343
CLOSURE LATCH

Barthold F. Meyer, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 24, 1970, Ser. No. 49,289
Int. Cl. E05c 3/26
U.S. Cl. 292—216 3 Claims

A latch for a vehicle body closure, the latch including a latch bolt, a detent lever, means frictionally resisting move-

ment of the detent lever and a transfer lever operable to overcome the friction and move the detent lever into and out of a detenting position against the latch bolt. A control pin on the latch bolt engages the transfer lever during movement of the



latch bolt from an unlatched to a latched position to actuate the transfer lever and initiate simultaneous movement of the detent lever to the detenting position, the aforementioned friction functioning to maintain the detent lever in the detenting position.

3,692,344

Patent Not Issued For This Number

3,692,345

COMPOSITE BUMPERS

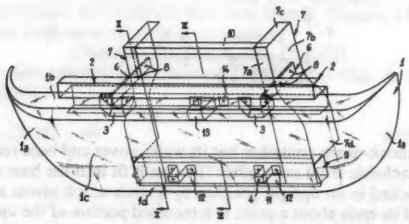
Jean-Michel Dumontier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, 07, Billancourt, Germany and Automobile Peugeot, Paris, France

Filed April 5, 1971, Ser. No. 131,034

Claims priority, application France, April 30, 1970, 7015924

Int. Cl. B60r *19/08*

U.S. Cl. 293—71 R **4 Claims**



This automotive bumper is a composite structure comprising a shield of synthetic material and a rigid reinforcing member having a S-shaped cross-sectional contour, disposed between the front portion of the shield and the plane of the front cross member of the vehicle chassis, said rigid member extending substantially throughout the width of said front portion, this bumper further comprising a pair of side flanges connecting in overhanging relationship the lower loop of said reinforcing member to said chassis cross member, said flanges being vertically and rigidly connected to one face of said cross member so that in case of shock said flanges are sheared about an axis substantially parallel to said chassis cross member.

3,692,346

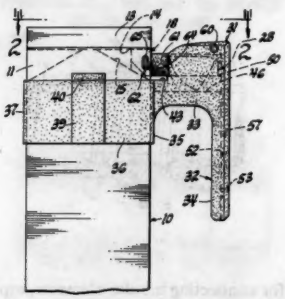
CAM OPERATED DETACHABLE CLAMPING CARTON HANDLE

James B. Simms, 8441 Birch Road, Taylor, Wis.

Continuation-in-part of Ser. No. 34,310, May 4, 1970. This application Oct. 21, 1971, Ser. No. 191,178

Int. Cl. A47b *95/02*

U.S. Cl. 294—31 A **5 Claims**



A cam operated detachable carton handle for use on milk cartons and the like, and which includes an integral rectangular housing adapted to be slidably mounted over the upper end of a carton. A handle is integrally formed on the housing. A plunger provided with retainer clip means is slidably mounted on the handle and a pivotally mounted cam is provided for camming the plunger into a recess in the upper end of the carton for releasably retaining the rectangular housing and handle in place on the carton.

3,692,347

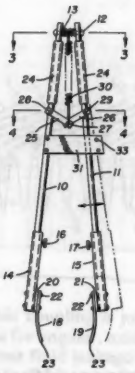
PICKUP TONGS

George F. Bixler, 2816 Firnley Ave., Youngstown, Ohio

Filed Nov. 19, 1970, Ser. No. 91,078

Int. Cl. A01b *1/18*

U.S. Cl. 294—99 SAJ **1 Claim**



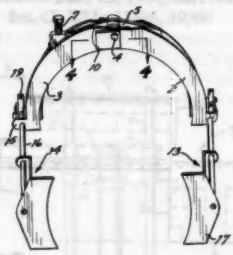
A pair of pickup tongs comprises a pair of tubular arms loosely pivoted to one another adjacent their uppermost ends and having telescopically arranged lower end portions carrying opposed blades. Spring means and interconnecting levers positioned between the tubular arms normally urged the same apart. Guide means are provided for restricting the motion of the tubular arms with respect to one another and maintaining them in opposed relation.

3,692,348

PIPE GRIPPING TONGS

John T. Doty, 9936 E. Ramona Ave., Bellflower, Calif.

Filed Sept. 3, 1970, Ser. No. 69,360
Int. Cl. B66c 1/44
U.S. Cl. 294—106 5 Claims



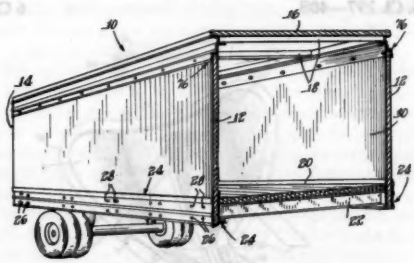
When handling large diameter industrial pipe it is frequently necessary to move the pipe along its longitudinal axis, and either forwardly or backwardly, depending on the particular problem; and also pipe is frequently supported vertically while lowering the pipe into or removing the pipe from a well. The pipe which is being worked upon is securely gripped by the tongs, and the gripping action is achieved by a means other than the weight of the tongs itself and the pipe engaged thereby. A manually actuated tong operator is, therefore, employed to actuate the tongs and cause them to securely grip the outer surface of the pipe.

3,692,349

TRAILER CONSTRUCTION

Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer Inc., Monon, Ind.

Filed Sept. 23, 1970, Ser. No. 74,713
Int. Cl. B62d 27/00, 25/02
U.S. Cl. 296—28 M 14 Claims



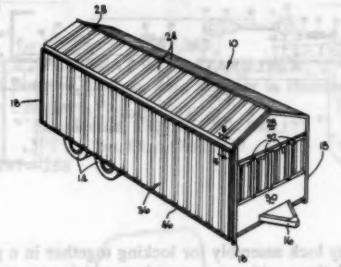
A trailer body is disclosed herein and generally includes a pair of side panels, an end panel, a top panel joining the side and end panels, and a floor positioned above and supported by a plurality of beams extending transversely of the side panels. Each of the side panels are secured to common ends of the support beams by an elongated channeled rail and fastening bolts extending transversely through the rail and side panel where they are fixed to the support beams, the bolts being positioned below the trailer body's floor so as not to interfere with cargo placed therein.

3,692,350

MOBILE OUTDOOR DISPLAY UNIT

Carl W. Radtke, Chicago, Ill., assignor to Ickes-Braun Glasshouses, Inc., Deerfield, Ill.

Filed May 10, 1971, Ser. No. 141,710
Int. Cl. B60p 3/02
U.S. Cl. 296—21 7 Claims



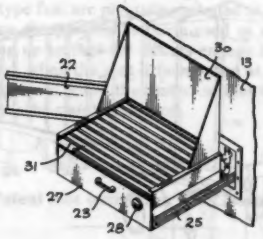
A mobile display unit is provided which can be expanded on location to provide a shelter for the display of merchandise, the unit being so constructed that, when in the expanded condition, it is capable of protecting the merchandise from environmental weather conditions and from access by unauthorized persons.

3,692,351

COOKING APPARATUS

Paul G. Christopher, 1850 Phillips Way, Los Angeles, Calif., and Ronald E. Jelsvik, 16430 Superior St., Sepulveda, Calif.

Filed May 17, 1971, Ser. No. 143,915
Int. Cl. A47j 37/00
U.S. Cl. 296—23 R 6 Claims



A cooking apparatus is disclosed herein having a stationary mounting unit carried on a motor vehicle for enclosing a cooking unit therein. A slide support is provided for mounting the cooking unit so that it will move laterally outward from the stationary unit to an in-use, exposed position. The cooking unit includes a grid for supporting a firebed of lava bricks or coals for supporting food intended to be cooked. A butane gas system is carried below the lava bricks for heating purposes.

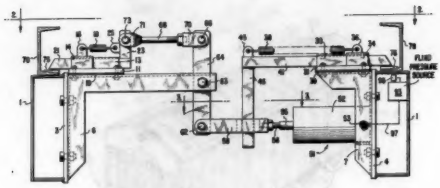
3,692,352

Patent Not Issued For This Number

3,692,353
SAFETY LOCK ASSEMBLY

Edward A. Lynde, Golden Valley, Oreg.

Filed July 21, 1970, Ser. No. 56,843
Int. Cl. B62d 27/06
U.S. Cl. 296—35 A 2 Claims

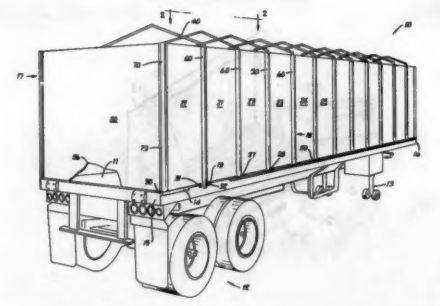


A safety lock assembly for locking together in a predetermined relative position two members which are arranged for movement relative to one another, displacement means being provided for moving the members relative to one another out of the predetermined position and the safety lock assembly being normally maintained in a locking position and being arranged for movement out of the locking position under the influence of driving means, the driving means and displacement means being connected to a common power source and the driving means being actuated when the power from the source is lowered than that required for actuating the displacement means.

3,692,354
TRUCK STAKE ARRANGEMENT

Robert P. Tuerk, 7710 Candlewood Lane, Indianapolis, Ind.

Filed Oct. 22, 1970, Ser. No. 83,118
Int. Cl. B62d 33/00
U.S. Cl. 296—36 12 Claims

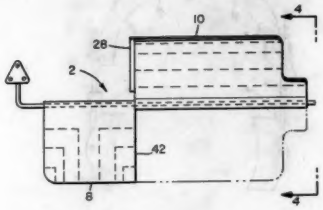


An arrangement of stakes for supporting panels on a flatbed truck. Hollow stakes with tapered bottom ends seatingly fit into pocket brackets mounted to the periphery of the bed. The stakes have triangular shaped cross sections with the corners of the triangle being thickened. Side panels are mounted to the bed being supportingly received by stakes with T-shaped brackets. Corner stakes with parallel first and second walls define vertically extending grooves which receive the edges of end panels. A third wall integral and perpendicular to the second wall defines a vertically extending groove for receiving the edge of a side panel. Tarpaulin rods are secured to the hollow top ends of the stakes.

3,692,355
AUTOMOTIVE VISOR

Soon Pil Hong, 1138 S. Ardmore Ave., Los Angeles, Calif.

Filed Sept. 24, 1970, Ser. No. 75,187
Claims priority, application Republic of Korea, Apr. 8, 1970, 1653
Int. Cl. B60j 3/02
U.S. Cl. 296—97 G 11 Claims

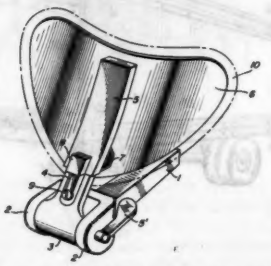


A visor for use in automobiles to block out deleterious light rays is provided. The visor is of two-piece construction, forming left and right hand portions or shields of plastic material. The right hand shield has a horizontally oriented variation of coloration providing varying degrees of light transmission or translucency. The left hand portion has a similar variation in coloration in a combined horizontal and vertical arrangement. The left and right hand portions are selectively rotatable out of the driver's line of vision so that the entire visor may be used for daytime use while the right hand portion may be rotated up and out of the line of vision for night time use. A tab on the right hand shield facilitates coincident movement of both shields.

3,692,356
HEAD REST WITH ADJUSTING DEVICES

Wolfgang Mertens, Karlsruhe, Germany, assignor to Firma Kurt Herzer, Karlsruhe, Germany

Filed Feb. 24, 1970, Ser. No. 13,575
Claims priority, application Germany, Sept. 2, 1969, P 19 44 414.5
Int. Cl. A47c 7/38
U.S. Cl. 297—408 6 Claims



The invention relates to tiltable head rests for attachment to the back rest of an automobile and includes a vertically adjustable head rest supported on a housing which includes a telescopic brace adapted to be moved relative thereto and associated at the opposite free end with locking members permitting the tilting operation.

3,692,357

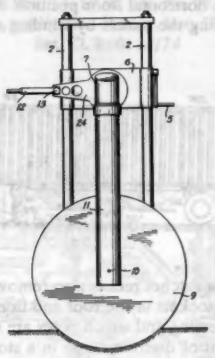
APPARATUS FOR CUTTING A SLOT IN A FOUNDATION MASS FOR DETERMINING DEFORMABILITY AND RESIDUAL STRESSES IN THE FOUNDATION MASS

Manuel Coelho Mendes da Rocha, Av. Estados Unidos da America, 95o3°D., and Jorge Neves da Silva, Rua Cabo Verde 14-2°D., both of Lisbon, Portugal

Division of Ser. No. 731,673, May 6, 1968, Pat. No. 3,533,283. This application June 12, 1970, Ser. No. 45,772

Int. Cl. E21c *25/06, 39/00*

U.S. Cl. 299—38 3 Claims



Apparatus for cutting a narrow slot in a foundation mass for measuring the deformability and the residual stress in the mass, the slot being formed by cutting a plurality of contiguous narrow slots with a rotatable cutting disc to a depth greater than the radius of the disc, whereafter a flat jack is inserted into the elongated slot and applies measured pressure against the faces bounding the slot whereby the faces undergo deformation which is measured by the jack.

3,692,358

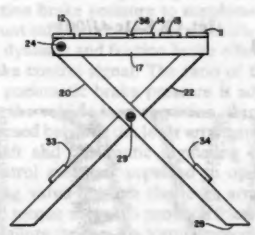
FOLDABLE ARTICLE OF FURNITURE

Albert Y. Sung, 1161 Buckingham Drive, Los Altos, Calif.

Filed June 9, 1971, Ser. No. 151,214

Int. Cl. A47b *39/00*

U.S. Cl. 297—159 13 Claims



An article of furniture movable between an erect position and a folded generally planar position is provided including a top planar supporting surface formed by two mating halves when the article is in its erect position. A first pair of braces are secured to the undersurface of one of the halves and extend in a direction normal to the line of mating of the halves and under the undersurface of the other of the halves to support the other of the halves when the article is in its erect position. A second pair of braces are spaced inwardly of the first pair of braces and are secured to the undersurface of the other of the halves and extend in a direction opposite to the first pair of braces and under the undersurface of the first of the halves to support the first of the halves when the article is in its erect position. Leg members for supporting the article in its erect position are pivotally secured to the free ends of the braces and cross on opposite sides of the top surface and are pivotally connected at their point of crossing. A bar is pivotally connected to the second pair of braces and the leg members pivotally connected thereto to provide both a support for the underside of the half having the first pair of braces secured thereto and a handle for carrying the article when it is folded into its generally planar position.

3,692,359

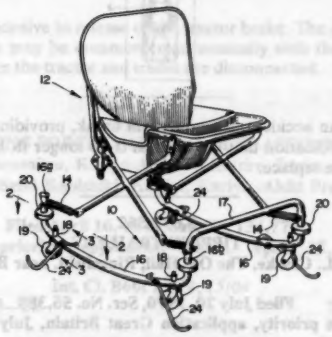
PLAYSEAT WITH STABILIZER

Raymond Boucher, Dothan, Ala., assignor to Hedstrom Company, Bedford, Pa.

Filed Dec. 4, 1969, Ser. No. 882,171

Int. Cl. A47d *13/10*

U.S. Cl. 297—258 5 Claims



An improved children's play seat is convertible between rocker, walker and bouncer positions. It has a pair of upwardly-curved rockers and a seat resiliently suspended from the rockers. Casters are provided at the ends of the rockers so that a child in the seat can propel the vehicle with his feet.

Outrigger type feet are pivotally mounted at the ends of the rockers. When the playseat is being used as a walker, these feet are swung up so that the casters engage the ground. On the other hand, when the seat is being used as a bouncer, the feet are swung down below the casters so that they engage the ground and thereby stabilize the seat.

3,692,360

Patent Not Issued For This Number

3,692,361

SECURING ELEMENT FOR VEHICLE SAFETY HARNESSES

Nils Ture Ivarsson, Kullavik, Sweden, assignor to Goteborgs Bandrarevi AB, Goteborg, Sweden

Filed April 22, 1971, Ser. No. 136,388

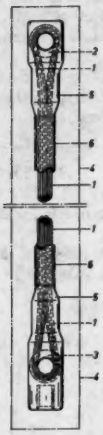
Claims priority, application Sweden, April 23, 1970, 5612/70

Int. Cl. A44b *21/00*

U.S. Cl. 297—385 7 Claims

A connector-type securing element for attaching one lock-carrying part of a vehicle safety harness to the vehicle floor. The element consists of extensible synthetic resin threads wound about two spaced-apart trundles, and a plastic cover completely enclosing the thread and trundle unit. The cover preferably is made of a material with a lower tensile strength

value than the threads enclosed therein such that upon abnormal elongated stresses on the harness, such as for instance in



case of an accident, the cover will break, providing a readily visible indication that the harness is no longer fit for use and should be replace.

3,692,362

TIPPING TRAILERS

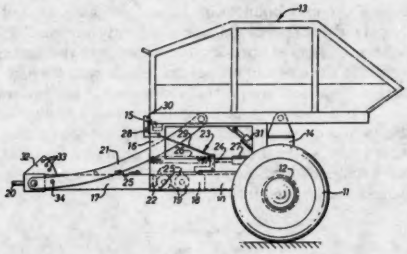
John B. L. Craske, The Old Hall, Ringsfield, near Beccles, England

Filed July 20, 1970, Ser. No. 56,389

Claims priority, application Great Britain, July 28, 1969, 37,685/69

Int. Cl. B60p *1/04*

U.S. Cl. 298—5 **7 Claims**



A tipping trailer for use, for example, in industry and agriculture where frequent tipping and frequent hitching to and disconnection from towing vehicles is involved, such trailer having a drawbar assembly which, by reversing the towing vehicle to which the trailer is connected while the trailer chassis is held stationary is operable to effect tilting or tipping of the trailer body or platform.

3,692,363

CONVERTIBLE VEHICLE BODY AND AUXILIARIES

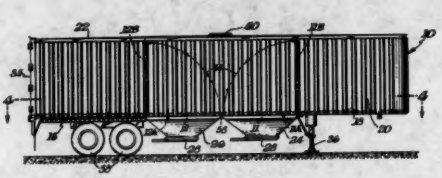
Paul Tenebaum, Glenside, and Paul J. Seng, Langhorne, both of Pa., assignors to Strick Corp., Fairless Hills, Pa.

Filed May 18, 1971, Ser. No. 144,545

Int. Cl. B60p *1/56*

U.S. Cl. 298—24 **40 Claims**

A truck-trailer body is converted to transport granular bulk cargo by raising a pair of central floor panels from over discharge hoppers to form the front and rear walls of a bin area over the hoppers. The raised panels are secured against removable sealing poles, which are engaged within the side walls by insertion of projections into sockets in the roof and floor of the body. The panels are clamped to the poles and the poles are sealed to the sidewalls and panels by a cushioning strip projecting in two directions from the pole. The space between the ends of the panels and the roof is sealed by a resilient flap which may be rotated into contact with the roof by a projection extending from the sealing poles through holes in the corners of the panels or which may be fixed to and extend downwardly from the roof. The rotatable flap drops down below and within the edge of the partitioning panel into the hopper in the horizontal floor position. A winch pole for raising and lowering the panels by winding and unwinding a



flexible strap on a ratchet reel is also removably installed by engagement into sockets in the roof and floor fore and aft of the panels. The sealing and winch poles are stored out of the path of movement of discrete cargo in a storage rack in the front of the body.

The partitioning panels are supported without imposing a load on their hinge pins by a series of brackets laterally spaced under their hinge plates. Other lateral support ribs contact the spaces between the hinge plates to substantially seal them against passage of dust upwardly through the hopper into the body. Structural cross members spanning the hoppers have a minimum peaked horizontal surface area to shed granular material. The multiple plies of the partitioning panels and the resilient seals about their peripheries also help seal them against upward passage of any dust.

3,692,364

METHOD OF OPEN-PIT MINING

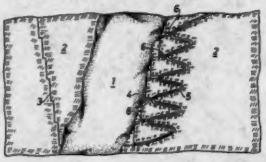
Sune Torsten Henriksson, Kvartsvagen 6, and Ragnar Ludvig Muotka, Kyrkogatan 46, both of 981 00 Kiruna, Sweden

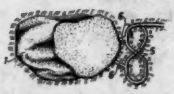
Filed Oct. 29, 1970, Ser. No. 84,963

Claims priority, application Sweden, Oct. 31, 1969, 14945/69

Int. Cl. E21c *41/00*

U.S. Cl. 299—18 **6 Claims**





A method of open-pit mining according to which a transport ramp system is provided in a tunnel system outside the open pit and the body of materials which is mined for establishing communication between the surface and the different mining levels.

ERRATUM

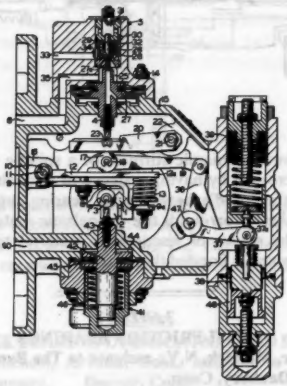
For Class 299—38 see:
Patent No. 3,692,357

3,692,365

METHOD AND APPARATUS FOR REGULATING BRAKE CONTROL PRESSURE

Rene Demarez, Gennevilliers, and Claude J. Dubois, Paris, both of France, assignors to Compagnie Des Freins Et Srgnaux Westinghouse, Freinville-Sevran, France

Filed Dec. 14, 1970, Ser. No. 97,509
Claims priority, application France, Dec. 12, 1969, 6943264
Int. Cl. B60t *13/74*
U.S. Cl. 303—3 14 Claims



A friction/dynamic brake blending valve device is provided for a railway vehicle brake control system, in which a torque motor is arranged with opposing field windings so that its output shaft reflects the difference between an electric brake control current supplying one winding and an electrical signal representing the effective dynamic brake effort supplying the other winding. The output shaft acts through a lever arrangement to drive a pneumatic regulating valve which provides the necessary friction brake pressure to supplement the dynamic brake an amount sufficient to produce vehicle retardation, by the combined dynamic and friction brake efforts, corresponding to the brake control signal. The ratio of the output shaft torque to the pneumatic brake pressure is adjustable, in accordance with the vehicle load condition, through a movable fulcrum interposed between the lever arrangement connecting the output shaft and pneumatic regulating valve. Auxiliary pneumatic control means is provided to operate the pneumatic regulating valve through the lever arrangement independent of the torque motor to produce friction brake in the event electric failure renders the torque motor ineffective.

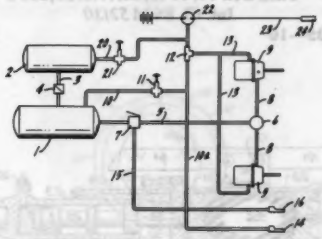
3,692,366

FLUID PRESSURE BRAKE SYSTEM

Sergio Campanini, Lincolnwood, Ill., assignor to Berg Mfg. & Sales Co., Des Plaines, Ill.

Filed Jan. 13, 1971, Ser. No. 106,154
Int. Cl. B60t *13/22*
U.S. Cl. 303—9 7 Claims

A tractor-trailer brake system having spring-applied, fluid pressure-released, emergency-parking brake actuators wherein a separate fluid pressure reservoir on the tractor may be communicated to the actuators to release the brakes and a separate tank on the trailer is automatically communicated to the trailer actuators to release the same through electrical means responsive to release of the tractor brake. The separate trailer tank may be communicated manually with the trailer brakes when the tractor and trailer are disconnected.

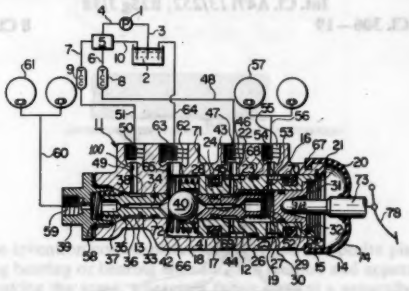


3,692,367

BRAKING FORCE CONTROL VALVE ASSEMBLY

Hiromu Kuromitsu, Kariya Aichi Prefecture, Japan, assignor to Aisin Seiki Kabishiki, Kaisha, Kariya, Aichi Prefecture, Japan

Filed April 16, 1971, Ser. No. 134,779
Claims priority, application Japan, April 17, 1970, 45/33254
Int. Cl. B60t *13/14, 15/04*
U.S. Cl. 303—52 7 Claims



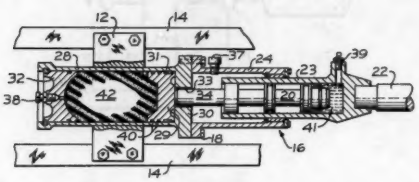
This invention relates to improvements in and relating to brake force control valve assemblies. More specifically, it relates to a brake force control mechanism to be used in such a hydraulic brake system wherein accumulated pressure fluid is conveyed from accumulator means through a control valve to wheel brake cylinders. In the inventive brake control valve assembly, a cylinder body thereof is formed with a stepped axial bore comprising a larger bore part and a smaller bore part. A hydraulic piston operatively connected with a brake pedal is slidably mounted in said larger cylinder bore part, said piston being formed with an axial bore. A first valve slider and a second valve slider are mounted slidably in the piston bore in an opposite arrangement to each other and a valve ball is positioned between the valve sliders with idle gaps. When the brake is actuated, these valve sliders and the ball valve acts as if they be rigid to each other, so as to establish a non-time-lag operation of these valve sliders.

3,692,368

ACCUMULATOR RECOIL CYLINDER WITH OIL FILM APPLICATOR

George F. Alexander, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 14, 1970, Ser. No. 80,680
Int. Cl. B62d *52/30*
U.S. Cl. 305—10 12 Claims



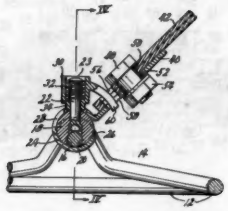
An oil film applicator for the gas sealing means of a piston in a horizontally disposed accumulator cylinder in a crawler track recoil and adjuster device. The accumulator cylinder is substantially filled with an oil-saturated polyurethane foam which assures complete lubrication of all portions of said sealing means.

3,692,369

MOP HANDLE MOUNTING

Erin O. Chase, Box 266, Seneca, Mo.

Filed June 10, 1971, Ser. No. 151,830
Int. Cl. A47l *13/252*; B25g *3/38*
U.S. Cl. 306—19 8 Claims



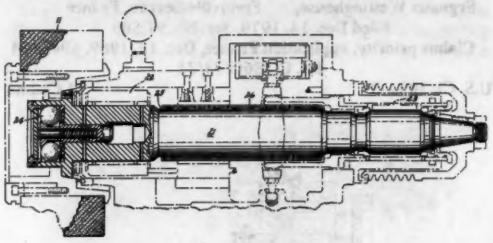
Mounting hardware for attaching a mop handle to a mop head including a mop head frame having a horizontal transverse cross bar, said hardware including a cylindrical barrel having a side outlet and having rotatably mounted therein a cylindrical spool with a groove formed in one side thereof, whereby when the groove and barrel outlet are angularly aligned, the cross bar may be inserted into said groove for rotation therein, and whereby when the spool is rotated out of alignment with the outlet, the barrel secures the cross bar in the groove, a manual lever for turning said spool in the barrel, a ferrule which may be fixed to the handle pivoted to said barrel on an axis at right angles to the spool, whereby the mop head can pivot universally relative to the handle, and means operable by the manual lever for selectively freeing or securing the ferrule against pivoting relative to the barrel, when the lever is in position to lock the cross bar in the spool groove.

3,692,370

DAMPING MEANS FOR INCREASING THE MINIMUM DYNAMIC STIFFNESS OF A SHAFT

John R. Hasz, 5686 Sherwood Drive, Milford, Ohio

Division of Ser. No. 857,155, Sept. 11, 1969, Pat. No. 3,664,228. This application Sept. 23, 1971, Ser. No. 183,035
Int. Cl. B24b *45/00*; F16f *15/00*
U.S. Cl. 308—1 12 Claims



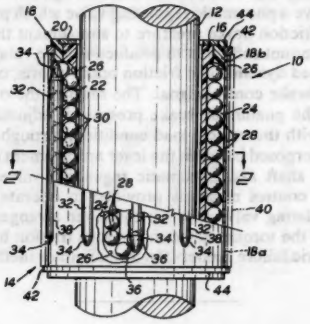
The minimum dynamic stiffness of a spindle of a grinding wheel is increased by having a sleeve of viscoelastic material bonded to the spindle between the bearing supports for the spindle. A sleeve surrounds the viscoelastic material sleeve to constrain the sleeve of viscoelastic material to increase its shear strains and is bonded thereto.

3,692,371

ANTI-FRICTION BEARINGS

Ted Geffner, Merrick, N.Y., assignor to The Barden Corporation, Danbury, Conn.

Continuation of Ser. No. 28,719, April 15, 1970, which is a continuation-in-part of Ser. No. 780,440, Dec. 2, 1968, abandoned, which is a continuation-in-part of Ser. No. 586,151, Oct. 12, 1966, Pat. No. 3,446,540. This application Oct. 15, 1971, Ser. No. 189,730
Int. Cl. F16c *29/06*
U.S. Cl. 308—6 C 20 Claims



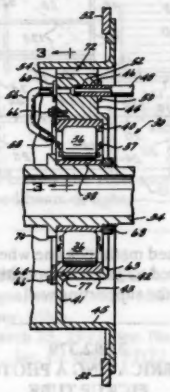
Anti-friction bearings for use between working members that may move relative to each other and wherein the anti-friction bearings include a plurality of bearing elements for supporting loads between the working members and in which one of the bearing elements is constantly in load bearing position while another of the load bearing elements moves between active and inactive positions and when in the active position shares the load with the bearing element in load bearing position.

3,692,372

THERMALLY EXPANSIBLE BEARING ASSEMBLY

Carroll Benson Pineo, Seabrook, N.H., assignor to General Electric Company

Filed June 24, 1971, Ser. No. 156,234
Int. Cl. F16c *35/04, 39/00*
U.S. Cl. 308—15 3 Claims



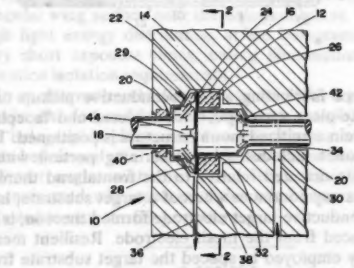
A thermally expansible bearing assembly includes stress relief cuts in the circumferential structure thereof that permit a uniform radial expansion around the circumference of the outer bearing race when subjected to thermal stress.

3,692,373

SLIPPER BEARING LUBRICATION AND SEAL

Kenneth E. Nichols, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 22, 1971, Ser. No. 155,496
Int. Cl. F16c *33/72, 17/03*
U.S. Cl. 308—36.3 6 Claims



A lubrication system and dynamic seal for floating slipper bearings including a lubricant pumping means responsive to rotation of a shaft supported by the bearings, a lubricant flow restriction communicating with the pumping means and a cavity that retains the bearings, and optionally, a second pumping means for raising lubricant pressure to the bearings.

3,692,374

COMPOSITE TAPERED ROLLER BEARING RACE

Hudson B. Scheifele, 30165 Ponds View Road, Franklin, Mich.

Division of Ser. No. 870,681, Oct. 27, 1969, Pat. No. 3,597,819. This application June 28, 1971, Ser. No. 157,375
Int. Cl. F16c *33/58*
U.S. Cl. 308—216 3 Claims

Suitable bearing race material is formed into bar stock having a longitudinally oriented grain structure and having a cross-section corresponding to the cross-section of the prospective bearing race. From the thus-shaped bar stock are cut a plurality of pieces whose combined lengths substantially equal the circumferential length of the prospective bearing race. These pieces are then bent into circularly arcuate segments having curvatures corresponding to that of the prospective bearing race and having ends configured to fit one another. These segments are then aligned end-to-end in an annular path and welded together into an annular body which is then hardened and ground. This bar stock is provided with an inclined side surface which, for an outer race, becomes the inner surface of the segment, and for an inner race becomes the outer surface of the segment, in each instance constituting the roller path.

3,692,375

COMPOSITE PLASTIC BEARING AND METHOD FOR MAKING THE SAME

Richard J. Matt, Simsbury, and Thomas P. Rolland, Bristol, both of Conn., assignors to Textron Inc., Providence, R.I.

Filed Dec. 1, 1970, Ser. No. 94,091
Int. Cl. F16c *33/14*
U.S. Cl. 308—238 19 Claims

The invention contemplates an improved composite plastic sliding bearing or bearing element, and method and apparatus for making the same, wherein a fabric liner at a generally tubular bearing interface is backed by a particular reinforcement of tensed flexible strands which are embedded in a hard mass of bonding material. High radial-compression load on the bearing is stoutly resisted by the reinforcement which comprises interlaced winding traverses at different helical-advance angles.

3,692,376

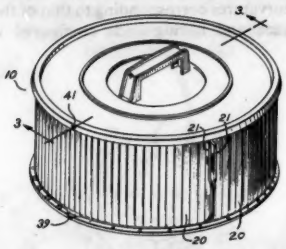
CASE FOR RECORDING TAPE CASSETTES

Kevin P. McKinsey, Northfield, and Thomas C. Mills, Wheaton, both of Ill., assignors to Double Sixteen Company

Filed Dec. 17, 1970, Ser. No. 99,007
Int. Cl. A47b *81/06*
U.S. Cl. 312—11 4 Claims

A carousel case for recording tape cassettes employs a spool-shaped cassette housing having a cylinder, a lower shelf

connected to one end of the cylinder and a top piece connected to the other end of the cylinder. The cassette housing is



rotatably mounted on a cone-shaped base. Radial slats are provided on the shelf and radial guides on the top piece to secure the cassettes within the housing.

3,692,377

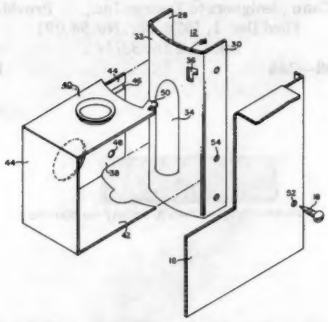
ELECTRICAL CONNECTION BOX ARRANGEMENT FOR APPLIANCE

Charlie L. Hancock, Grove City, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1971, Ser. No. 105,349

Int. Cl. A47b *77/08, 81/00*

U.S. Cl. 312—223 **5 Claims**



The subject connection box is formed with two open faces thereon and is mounted to a support leg for the appliance so that the leg closes one of the open faces of the box, while the other open face of the box is closed when the service toe panel is secured to the leg.

3,692,378

SHELF AND CLOTHES HANGER APPARATUS AND METHOD

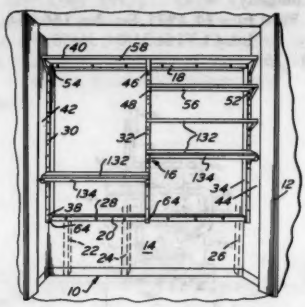
David D. Sharp, Flourtown, Pa., assignor to Reinhart, Inc., Philadelphia, Pa.

Filed July 17, 1969, Ser. No. 842,664

Int. Cl. A47b *67/02*

U.S. Cl. 312—242 **5 Claims**

A shelf and clothes hanger apparatus, intended for use in closets or closet-like wall recesses, is provided. The apparatus comprises generally horizontal support strips, bridging and coupled to a plurality of wall studs, generally vertical standards coupled to support strips, brackets coupled to the standards, and shelf and clothes hanger apparatus coupled to the



brackets. The disclosed method is one wherein components of the apparatus are used as gauges to position the apparatus at desired locations on the supporting wall.

3,692,379

METHOD OF FABRICATING A PHOTOCONDUCTIVE PICKUP TUBE

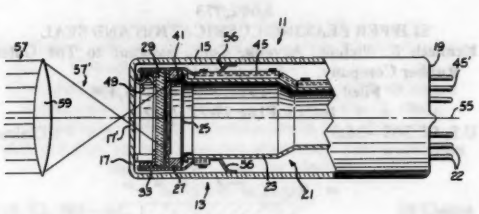
John J. Miller, Seneca Falls, and Carl W. Penird, Waterloo, both of N.Y., assignors to Sylvania Electric Products Inc.

Division of Ser. No. 11,616, Feb. 16, 1970, Pat. No. 3,619,685.

This application May 24, 1971, Ser. No. 146,301

Int. Cl. H01j *9/18*

U.S. Cl. 316—19 **4 Claims**



A method of fabricating a photoconductive pickup tube utilizing a one-piece envelope, with a closed-end faceplate portion, wherein a unitized mount structure is positioned. The integrated mount includes a beam forming portion with a mesh electrode oriented relative to the frontal end thereof. The unitized array continues whereof a target substrate, having a photoconductive target electrode formed thereon, is insulatively spaced from the mesh electrode. Resilient means are terminally employed to spaced the target substrate from the interior surface of the envelope faceplate, and a connective means for the target electrode is extended in an insulated manner along the mount to emerge from the base portion of the envelope.

3,692,380

METHOD AND APPARATUS FOR PRODUCING HOLOGRAMS UTILIZING A PLURALITY OF SHORT FOCUS CONVEX LENSES

Takefumi Inagaki, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 1, 1971, Ser. No. 111,537

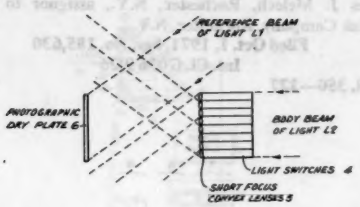
Claims priority, application Japan, Feb. 10, 1970, 45/11765

Int. Cl. G02b *27/22*

U.S. Cl. 350—3.5 **7 Claims**

A plurality of short focus convex lenses are irradiated with a coherent beam of light. The coherent beam of light is diffused

by the lenses and the diffused light is directed to a storage plate. The storage plate is irradiated with a reference beam of



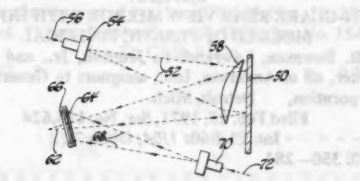
light in a manner whereby the reference beam of light interferes with the diffused beam of light.

3,692,381

HOLOGRAPHY WITH SPECULAR OBJECTS

Edwin B. Champagne, Ann Arbor, Mich., assignor to GCO, Inc., Ann Arbor, Mich.

Filed March 25, 1971, Ser. No. 127,978
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 **6 Claims**



A holographic analysis of the deflection occurring in an aircraft wing section as a result of loading is conducted to uncover defects in the structure. In forming the hologram a lens is employed to focus the object beam reflected from the specular wing surface near the hologram plane. The resultant high light energy distribution at the hologram plane allows very short exposure times, easing illumination source and vibration isolation requirements.

In an alternate embodiment, a second lens is placed so as to receive the focused beam and to image the object surface at the holographic plane, and two exposures are made on the plate before and after loading with reference beams that make different angles with the plate. The resulting hologram is reconstructed with separate reference beams which may be adjusted to vary the fringe pattern.

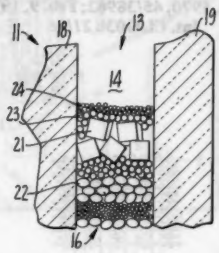
3,692,382

PICTURE DEVICE AND METHOD OF MAKING PICTURES UTILIZING THE SAME

Roy L. Cloutier, 3086 Deseret Drive, Richmond, Calif.

Filed May 7, 1970, Ser. No. 35,469
Int. Cl. G02b 27/08
U.S. Cl. 350—5 **9 Claims**

A device for creating and displaying artistic flow patterns in picture-like form utilizing different colored classes of particles carried in a picture-like container, with the different classes of particles having different physical properties causing the particles to form semi-random accumulations and concentrations to provide the artistically pleasing flow pattern effect. Two rectangular glass or plastic plates are held in closely spaced parallel relation by a surrounding frame and the particulate material is carried in the space between the two plates. In different forms of the invention, the artistic effect is enchanced by making at least some of the particles translucent and shining light through them, by making at least some of the particles fluorescent and reflecting from them, making the different classes of particles in various colors, etc. The method form of the invention involves selection of particle classes, each class having unique visual appearance and having sufficient differentiation between physical characteristics, such as size, shape, density, or any other properties affecting relative physical movement in such manner that the particles flow dif-



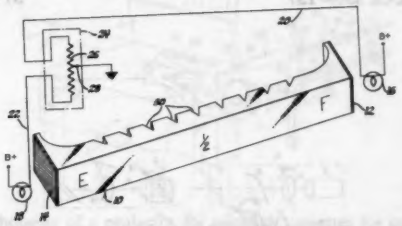
ferently and cause a heterogeneous array of concentrations and accumulations of the different classes of particles to provide a different design each time the particles are disturbed. Means is provided for continuous agitation of the particles to provide dynamic flow patterns in one modification of the invention, and a method is provided for retaining the particles in a desired configuration in another modification of the invention.

3,692,383

OPTICAL ANALOG DISPLAY DEVICE

Donald M. Herod, Davison; John C. Engelman, Lapeer, and William J. Johnston, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,846
Int. Cl. G02b 5/14
U.S. Cl. 350—96 R **3 Claims**



A bar of light conducting material has notches formed in its rear face. The size of the notches are inclined at progressively different angles so that the efficiency of reflection of light toward the front face progressively varies along the length of the bar. Light filters of different colors are placed at each end of the bar and a lamp is provided adjacent each filter so that colored light is transmitted through the bar from each end to illuminate the sides of the notches so that the display apparent at the front face of the bar is a series of striated colored images. The color reflected from a given notch is a function of the relative intensities of light from the lamps. An electrical sending unit responsive to some condition varies the intensity of each lamp according to the amplitude of the condition. Thus as the condition changes, the striated bands progressively change in color.

3,692,384

CURVED PROJECTION SCREENS

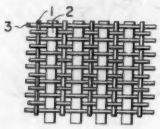
Hiroshire Kimura, Uji-shi, Kyoto; Takeshi Nambu, Neyagawa-shi, Osaka; Kiyoshi Inoue, Uji-shi, Kyoto; Yoshiyuki Imahori, Nakakyo-ku, Kyoto-shi, Kyoto; Kenjyo Yamaguchi, Kyoto-shi, Kyogo, and Kyozo Umeno, Uji-shi, Kyoto, all of Japan, assignors to Kabushiki Kaisha Midoukai, Osaka-shi, Japan

Filed May 15, 1970, Ser. No. 37,642

Claims priority, application Japan, May 15, 1969, 44/37516; May 20, 1970, 45/38962; Feb. 9, 1970, 45/11367

Int. Cl. G03b *21/56*

U.S. Cl. 350—119 6 Claims



A curved wide angle projection screen fabricated of a material having vertical ridges for effectively reflecting toward the audience a high percentage of light incident upon the screen. In addition, the projection screen is provided with a plurality of holes for permitting efficient sound transmission through the screen. Finally, a large number of tape-shaped elements are attached in a louver fashion to the screen frame to overcome the difficulties inherent in curved screens.

3,692,385

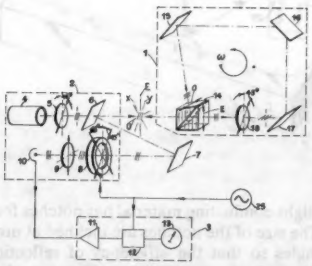
ROTATION SENSITIVE RETARDER SYSTEM

John George Gievers, 245 Wimpole Drive, Rochester, Mich.

Filed June 1, 1970, Ser. No. 41,849

Int. Cl. G02f *1/24*

U.S. Cl. 350—157 37 Claims



A rotation sensitive retarder system comprising an optical loop around which two orthogonal linear polarized light beams are guided in opposite directions. A splitting and reunifying device is utilized in the optical loop for producing two orthogonal components and reunifying the components. Rotation in inertial space produces polarization-form convertion in the reunified beam which then is analyzed to determine the extent of the rotation.

3,692,386

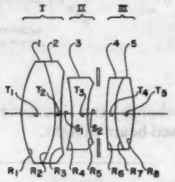
MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM

Charles J. Melech, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,630

Int. Cl. G02b *9/26*

U.S. Cl. 350—227 3 Claims



A printer lens consists of a middle negative biconcave component surrounded by two positive doublets, with the lens parameters being selected to reduce secondary spectrum.

3,692,387

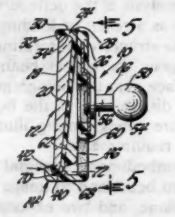
ANTI-GLARE REAR VIEW MIRROR WITH HOUSING MOLDED OF PLASTIC MATERIAL

Karl R. Bowman; Lawrence L. Jemison, Jr., and Orval H. Parker, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,624

Int. Cl. B60r *1/04*; G02b *7/18*

U.S. Cl. 350—281 1 Claim



An anti-glare rear view mirror wherein a one-piece plastic housing includes a mirror casing and support base which are hingedly connected at an integral flexible web. A prismoidal mirror element carried by the casing is selectively pivoted about the web between "day" and "night" viewing positions by cooperating finger actuated tabs and detents formed on the casing and the support base.

3,692,388

ELECTRICALLY RESPONSIVE LIGHT FILTER

John A. Hall, Jr., Boston, and John J. McCann, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

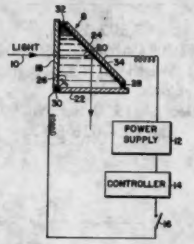
Filed Nov. 28, 1969, Ser. No. 880,796

Int. Cl. G02f *1/28, 1/36*; G02b *5/24*

U.S. Cl. 350—312 20 Claims

A controllable light filtering element having an electrolytic cell in which is an electrode having a specularly reflecting surface. The electrode is positioned to reflect light entering the electrolyte through an entrance window toward an exit win-

dow. The electrolyte contains a redox agent. Electrode polarity and potential are selected to cause a light absorbing layer to



form adjacent the electrode's reflecting surface. Light transmission through the filter is regulated by controlling the current and voltage.

3,692,389

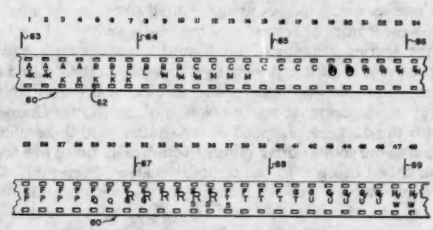
VISUAL EFFECTS FOR MUSIC

Selden Levy, New York, N.Y.; Stuart Grant, Baldwin, N.Y.; Vincent Coryell, Mt. Kisco, N.Y., and Fred Diamond, Island Park, N.Y., assignors to Disc-O-Lite Corporation, Inc.

Continuation-in-part of Ser. No. 878,140, Nov. 19, 1969, abandoned. This application June 18, 1971, Ser. No. 154,346

Int. Cl. G03b *31/06*

U.S. Cl. 352—5 9 Claims



Method and apparatus for accentuating beats in a musical arrangement. A continuous loop of film is prepared containing sequential sets of different images. A predetermined number of the images is projected for no more than one-third of a second ensuring that there is a discrete image change within one-sixth of a second of the time of occurrence of a beat.

3,692,390

AUDIO-VISUAL DEVICE

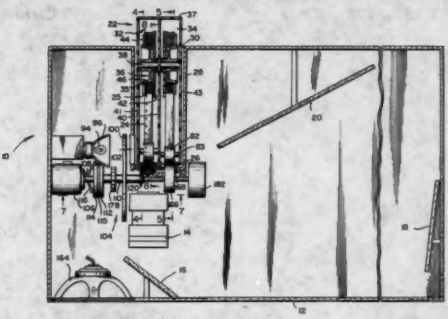
Morton A. Siegel, Plainview, N.Y., assignor to Kinesonic Industries Ltd., New York, N.Y.

Filed March 2, 1970, Ser. No. 15,661

Int. Cl. G03b *21/38, 31/04*

U.S. Cl. 352—17 4 Claims

A projector casts on a screen, from an endless loop picture film either a still image of a single frame or a moving image representing a blend of a succession of frames. The audio component accompanying the picture film is carried on an endless loop magnetic tape which additionally carries inaudible signals. The signals control an intermittently operating picture film advance. The film loop and the tape loop are both coiled in side-by-side relation in separate compartments of a twin-compartment cartridge. Separate magnetic pickups are included for the audio component end for the signals of the tape loop. The signals control a solenoid actuated detent which can stop the picture film advance at single pre-selected frames so that, when appropriate, a single frame image in the still mode is projected, while the audio accompaniment continues uninterrupted. At other times the signals permit the film to advance at the same time as the tape. Thereby, a continuous running commentary is synchronized with any mixture of



still and moving pictures projected on the screen. The film advance drive includes a sleeve concentrically mounted on a rotating drive shaft. The sleeve is coupled to the rotating drive shaft by a clutch which slips when the detent engages the sleeve.

3,692,391

PROJECTOR FOR USE WITH CONTAINERS FOR MOTION PICTURE FILM

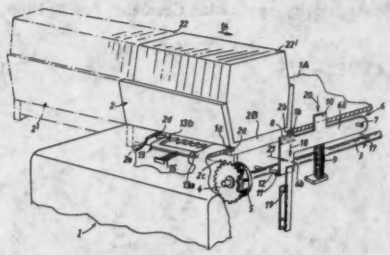
Alfred Winkler, Munich, and Johann Zanner, Jr., Unterhaching, both of Germany, assignors to AGFA Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 17, 1970, Ser. No. 99,178

Claims priority, application Germany, Dec. 20, 1969, P 19 64 006.3

Int. Cl. G03b *21/04*

U.S. Cl. 352—123 10 Claims



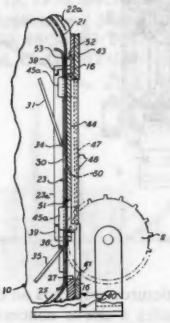
The housing of a projector for use with cassettes for convoluted motion picture film defines a channel for lengthwise movement of shorter or longer trays which store stacks of cassettes. A blocking lever normally extends into the path of lengthwise movement of an inserted tray to arrest the tray in a starting position one step ahead of that position in which the foremost cassette in the tray is located in a projection position. The blocking lever is automatically moved away from the path of the inserted tray when the transporting mechanism which serves to move the tray lengthwise is operated in the starting position of the tray. The housing carries a pawl which engages a toothed portion of the inserted tray to prevent its movement in the rearward direction. The tray carries a pusher which causes the blocking lever to open a switch in the electric circuit of the projector when the transporting mechanism advances the tray beyond the starting position through such a distance that the rearmost cassette in a filled tray is moved beyond the projection position.

3,692,392

FILM CARTRIDGE

Henry L. Brill, Flushing, N.Y., assignor to E. R. E. Laboratory, Inc., West Orange, N.J.

Filed April 19, 1971, Ser. No. 135,160
Int. Cl. G03b *21/00*
U.S. Cl. 352—128 7 Claims



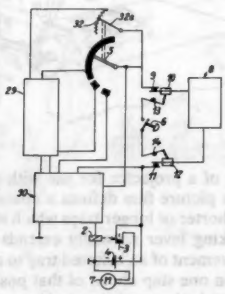
An endless film cartridge has a lock pin to engage a sprocket hole of the film as the cartridge is removed from its holder. The lock pin holds the film correctly framed in the aperture window and assures proper engagement of the drive teeth with the film when the cartridge is mounted again in the holder. The guide pad on the holder pushes a pressure plate inwardly of the cartridge to release the film from the lock pin as the cartridge is mounted.

3,692,393

MOVIE CAMERA WITH DELAYED RELEASE AND SCENE LIMITING CIRCUITS

Peter Anderl, Munich, Germany, assignor to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Filed Jan. 9, 1970, Ser. No. 1,740
Claims priority, application Germany, Jan. 9, 1969, P 19 00 877.6
Int. Cl. G03b *15/00*
U.S. Cl. 352—175 10 Claims



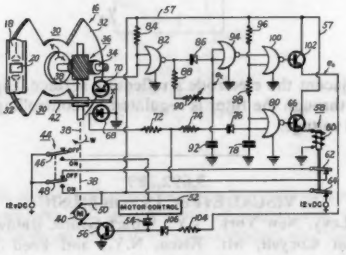
In a movie camera, an energizing circuit including a supply source for the camera, a drive motor included into such circuit, releasing device having a rest position in which it is operable to open the energizing circuit and an operating position in which it is operable to close the energizing circuit, the releasing device including a manually operable releasing member having an open and a closed position and included in the energizing circuit, a control magnet in circuit relationship with the motor, with the supply source and with the releasing member, a timing network connectable across the releasing member for affecting the energization of the control magnet after a predetermined time interval while the releasing member is in the open position.

3,692,394

MOTION PICTURE CAMERA MOTOR CONTROL

George W. Bauer, II, Westfield, N.J., assignor to Anton Bauer, Inc., Norwalk, Conn.

Filed Dec. 14, 1970, Ser. No. 97,545
Int. Cl. G03b *1/42*
U.S. Cl. 352—176 14 Claims



A motion picture camera with a rotary shutter which, as it rotates, periodically permits an image from the camera lens to reach the film, and then reflects the image to the eyepiece, etc. Motor controls are provided for controlling the speed of the shutter so that the shutter automatically stops at a location in which it blocks and reflects images to the eyepiece rather than one in which images are permitted to reach the film. A pulse generator operates synchronously with the rotary shutter. During stopping of the shutter, whenever the speed of the shutter is insufficient to bring it to a stop at the desired location, the pulse generator produces electrical pulses whose energy would decrease as the position of the shutter changes, but for the decrease in speed of the shutter, and these pulses are fed to the shutter drive motor to control its speed at a level sufficient to bring it to the desired location. Preferably, the pulse generator includes a transparent disc with opaque lines spaced around it, together with an infrared light source and a phototransistor. The spacing between adjacent opaque lines gradually decreases at successive positions around the disc, and a relatively large opaque area is provided on the disc in the vicinity of the position in which the shutter is to be stopped.

3,692,395

MOTION PICTURE CAMERA CAPABLE OF AUTOMATIC OVERLAP PHOTOGRAPHING

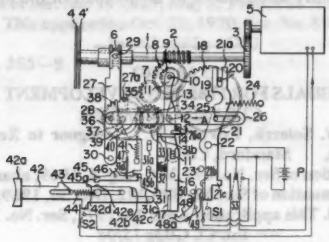
Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 64,256, Aug. 17, 1970, abandoned.
This application Nov. 23, 1971, Ser. No. 201,588
Claims priority, application Japan, Aug. 18, 1969, 44/64708
Int. Cl. G03b *21/36*
U.S. Cl. 352—217 15 Claims

This invention relates to a motion picture camera which is capable of automatic overlap photographing.

In the present invention, shutter operation or motion for depressing shutter release lever is separated into two steps. In the first step operation, normal photographing is effected, and in the second step operation, the automatic overlap mechanisms are actuated so that shutter blades vary their opening angle from full open to fully closed thereby fade-out photographing is accomplished, and succeedingly said fade-out photographed film is rewound while the shutter opening is kept fully closed. When said rewinding of film completed, the fade-in operation is provided and in this state, by depression of the shutter release lever to its first step, fade-in operation is

carried out and after said fade-in photographing was completed, in other words, after the automatic overlap



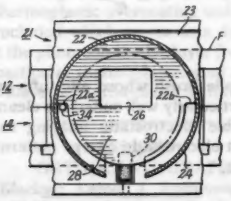
photographing was finished, all mechanisms return to their initial positions. In this way normal photographing can be carried out continuously.

3,692,396

SPLIT IMAGE MOTION PICTURE PROJECTOR AND FILM THEREFOR

Vincent F. Novak, 155 Laurel Road, Princeton, N.J., and John William Mason, R.D. 2, Warren Lane, Hopewell Junction, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,163
Int. Cl. G03b *1/48*
U.S. Cl. 352—221 **1 Claim**



A conventional motion picture projector which has been adapted to receive and project a specially prepared film. The projector and film combination are capable of playing an entire feature length film lasting ninety minutes or so and employing but a single reel whether the projector is of the reel-to-reel or continuous loop type. The film is so prepared that each frame has a pair of independent image composites which are separately and serially projected. The projector is adapted to project the film due to a shutter in its lens system which permits only one of the image composites to be projected at any one instant of time, the shutter being capable of either manual or automated operation.

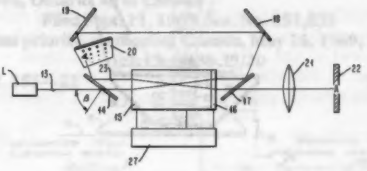
3,692,397

OPTICAL CHARACTER GENERATOR

Franz Schedewie, Boblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 12, 1971, Ser. No. 133,024
Claims priority, application Germany, July 23, 1970, P 20 36 516.6
Int. Cl. G03b *23/00;* **G02f** *1/26*
U.S. Cl. 353—25 **7 Claims**

An optical character generator comprises in combination, a source (L) of collimated and polarized coherent light, a first polarization-dependent beam splitter 14 presenting a low impedance optical transmission path to the light 13, an electro-optic light deflector 15 which deflects light transferred to it by the beam splitter, an electro-optic rotator 16 operating selectively to rotate the plane of polarization of light exiting from the deflector, a second low-loss polarization dependent beam splitter 17 having predetermined orientation with respect to light exiting from the rotator, mirrors 18,19 for directing light reflected from second splitter 17 to character mask 20, and source 27 of deflection/polarization control voltages for coordinately operating the deflector 15 and rotator 16. With suitable voltages from the source 27 light 13 undergoes predetermined handling in the deflector and rotator and exits from the rotator with predetermined deflectional displacement and polarization rotation relative to the entering beam 13. The exit polarization plane is rotated by 90° from the entry plane so that the displaced exiting beam is reflected by splitter 17 and mirrors 18, 19 through a predetermined character opening of



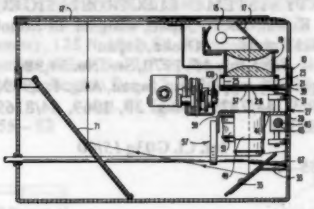
the character mask and emerges shaped in the character image. The shaped beam impinges upon first splitter 14 and is reflected back into the deflector system due to its positional orientation and polarization state. The shaped re-entrant beam undergoes complementary deflection and polarization switching in the deflector and rotator whereby it exits from the rotator aligned with the path of the original beam 13 and is permitted to pass through the second beam splitter, optics 21 and fixed aperture A of the shutter 22. Thus the single deflector system performs the dual functions of deflecting the unshaped beam and re-centering the shaped beam, with coupling losses minimized by the adaptive use of the low-loss beam splitters.

3,692,398

PROJECTOR

Martin Strauss, 6005 Durbin Road, Bethesda, Md.

Filed March 16, 1970, Ser. No. 19,766
Int. Cl. G03b *23/12, 21/22, 21/20*
U.S. Cl. 353—26 **8 Claims**



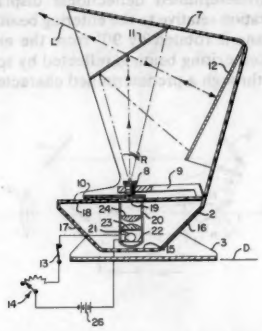
A projector comprising a film supply support and a film receiving support for film supply means and film receiving means, respectively, means for advancing film from said film supply means to said film receiving means, a light source providing light through said film, an image surface, an optical system for projecting an image from the film to said image surface, said optical system comprising a lens of lower magnification and a lens of high magnification positioned transversely one to the other with respect to a common field of view, shifting means for interchangeably positioning said lenses behind said film, said lens of higher magnification projecting an image reduced in area compared to that projected by said lens of lower magnification to project select areas of the image projected by said lens of lower magnification.

3,692,399

MICROFILM VIEWER

Marshall E. Stewart, Redondo Beach, Calif., assignor to Stewart Filmscreen Corp., Torrance, Calif.

Filed June 23, 1970, Ser. No. 49,028
Int. Cl. G03b *23/08, 21/28*
U.S. Cl. 353—27 12 Claims



A microfilm viewer for viewing of microfilm frames by an individual and comprising a light source positioned to project a beam of light through a microfilm frame and a lens system onto a beam splitter which reflects the projected image of the microfilm frame onto a reflex reflector screen arranged to reflect the projected image back to and through the beam splitter to be viewed by the individual. Means are provided for varying the intensity of the light source to reduce the brilliance of the projected magnified and reflected image to an eye tolerable level. The magnified and reflected image has excellent definition and brilliance and may be viewed irrespective of ambient light conditions.

3,692,400

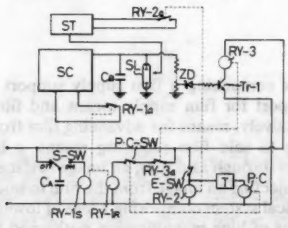
Patent Not Issued For This Number

3,692,401

SAFETY SYSTEM IN ELECTROSTATIC COPIER

Yoshihisa Kawai, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 15, 1970, Ser. No. 54,984
Claims priority, application Japan, Aug. 1, 1969, 44/73797; Aug. 1, 1969, 44/73798; Aug. 28, 1969, 44/81699; Sept. 8, 1969, 44/85324
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 11 Claims



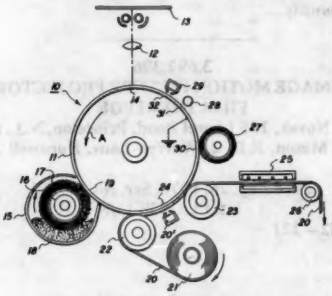
A copier is provided with a corona discharge device for charging copy paper and a discharge tube for exposing copy paper. In order to eliminate hazards attributable to high voltage attending repair and inspection of the machine, the copier further includes a system for stopping charging of a high voltage capacitor after the charge thereon has been released for exposing the last sheet of copy and a safety switch circuit for quickly releasing the charge on the high voltage capacitor simultaneously when a door or hinged part of the machine is opened.

3,692,402

MATERIALS FOR FIBROUS DEVELOPMENT AND CLEANING MEMBER

Thomas W. Solarek, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 847,284, Aug. 4, 1969, abandoned, and a continuation of Ser. No. 889,282, Dec. 30, 1969, Pat. No. 3,610,693. This application April 26, 1971, Ser. No. 137,379
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 1 Claim



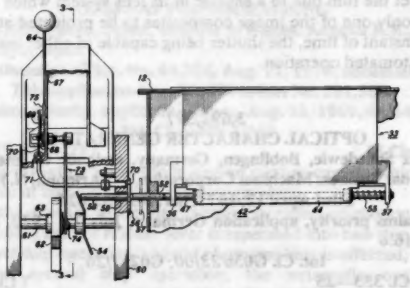
A woven cut pile brush whose pile tufts are formed from glass fibers is particularly well suited for cleaning toner particles from reusable electrostatic imaging surfaces and for developing latent electrostatic charge patterns formed on an insulating surface.

3,692,403

AUTOMATIC CONTROL OF TONER CONCENTRATIONS

Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,380
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 17 Claims

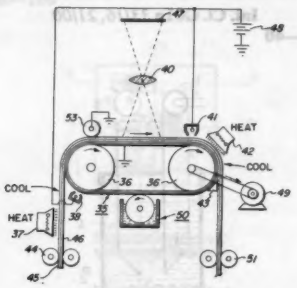


Controls for manually selecting toner concentrations in a xerographic imaging system are overridden to prevent overtoning. A drive mechanism responsive to copy production incrementally resets the toner controls to a standard toner concentration when that level is exceeded.

3,692,404
STRIPPABLE LAYER RELIEF PRINTING

Corrsin Lester, 138 Highledge Drive, Penfield, N.Y., and Joan R. Ewing, 107 Normandy Ave., Rochester, N.Y.

Division of Ser. No. 193,129, May 8, 1962, Pat. No. 3,615,387.
This application Oct. 29, 1970, Ser. No. 85,066
Int. Cl. G03g 15/00
U.S. Cl. 355—9 8 Claims

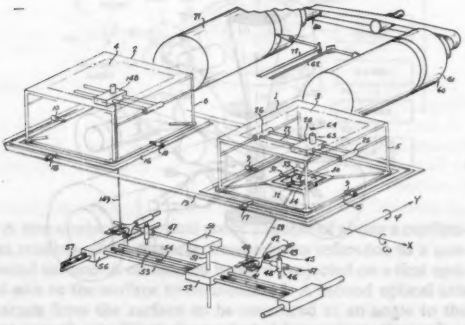


Overcoated layer relief electrostatic printing in which a latent electrostatic image is made visible by the deformation of a compliant layer. The relief deformation occurs in a thermoplastic layer superimposed on conventional xerographic materials such as the conductive substrate which has been coated with a photoconductive insulating layer, the thermoplastic material overcoating the photoconductive layer. Apparatus is disclosed for separable and permanent thermoplastic overcoating on the xerographic plate. An interlayer between the thermoplastic overcoating and the photoconductive layer is included which serves as a deformable support and to protect the photoconductive layer from any interaction between the particular thermoplastic used and the solvent or heat used to initiate the thermoplastic deforming action.

3,692,405
ORTHOCARTOGRAPH

Theodore J. Blachut; Antoni J. Smialowski; Gerhardus H. Schut, and Philip D. Carman, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Jan. 18, 1971, Ser. No. 106,956
Claims priority, application Canada, Feb. 10, 1970, 74,470
Int. Cl. G01c 11/18
U.S. Cl. 355—22 10 Claims

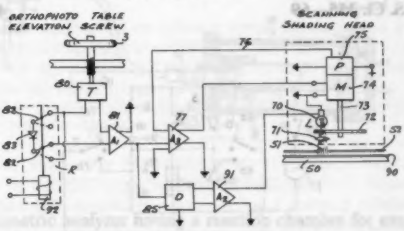


An orthocartograph is disclosed which is in the form of a mechanical photogrammetric plotter from which corresponding sections of stereophotographic images are corrected and transferred simultaneously by an optical train and printed simultaneously on light sensitive films in a printing unit. The relative positions of both films in every point is rigidly controlled so that orthophotos are produced. Magnification of the image from the stereo-photographic images is varied in accordance with a Z-coordinate at right angles to X- and Y-coordinates and in accordance with an ω -tilt about the X-axis and a ϕ-tilt about the Y-axis, relative to the principal point. Scanning being performed in the X-direction, the image is rotated in accordance with the ω -tilt about the X-axis.

3,692,406
RELIEF SHADING APPARATUS

Theodore J. Blachut, 29 Cedar Road, Rothwell Heights, Ottawa, Ontario; Zbynek Marsik, 255 Durocher, Apt. 7, Eastview, Ontario, and David M. Makow, 14 Davidson Crescent, Ottawa, Ontario, all of Canada

Filed Sept. 11, 1969, Ser. No. 857,035
Claims priority, application Canada, May 16, 1969, 51814
Int. Cl. G03b 35/20
U.S. Cl. 355—22 7 Claims

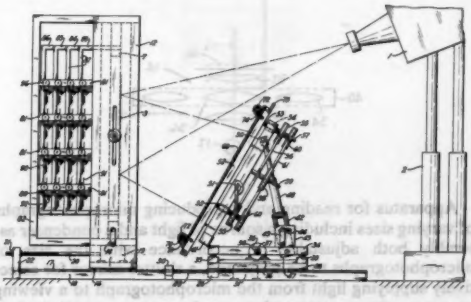


A method and apparatus is described for placing shading on a map representation of a three dimensional surface. The shading is developed by scanning a three dimensional representation of the surface and following the instantaneous height of the part of the representation being scanned. A signal is generated from the rate of change of such height and caused to affect a sensitive surface to place shading on it in those areas which represent the sides of features on the map facing away from a chosen direction of supposed illumination of the surface.

3,692,407
METHOD AND APPARATUS FOR MAKING AERIAL SURVEY PHOTOGRAPHS SCALE

Morris Ramsay, 125 N. Main St., Greensburg, Pa.

Continuation of Ser. No. 2,739, Jan. 14, 1970, abandoned.
This application Dec. 17, 1970, Ser. No. 99,323
Int. Cl. G03l 27/68
U.S. Cl. 355—52 17 Claims



The method of making an aerial survey photograph of a geographical area to scale and apparatus for use in said method. A plotting is made on a template, preferably posi-

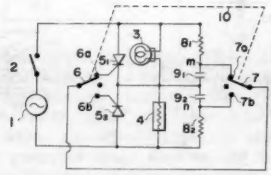
tioned on an easel, at a given scale of the correct relative locations of key points of a geographical area. An image of an out of scale aerial survey photograph of said area showing said key points is projected onto a flexible reflective surface, preferably a mirror, which in turn reflects said image onto the template. The flexible reflective surface is manipulated, preferably by deforming the mirror by certain provided means, until the key points of said image registers with the corresponding key points on the template. The projection is then stopped, an unexposed photographic film placed at the template location, and the projection resumed, thereby making an inscale photograph at the same scale as the template of the geographical area.

3,692,408

ENERGIZING CIRCUIT FOR A DUPLICATING MACHINE

Kitamaro Nakamura, Toyokawa, Japan, assignor to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 11, 1970, Ser. No. 97,120
Claims priority, application Japan, Dec. 12, 1969, 44/99402
Int. Cl. G03b 27/72
U.S. Cl. 355—69 4 Claims



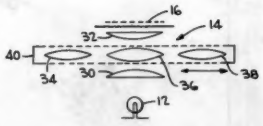
Circuits for controlling the energization of a lamp and a heater in a copying machine include rectifiers for conducting respective half cycles of an AC power source to the lamp and the heater. Control is also provided for varying the instant which the heater and lamp are energized in each respective half cycle so as to vary the amount of current to each device. Additionally, the circuitry provides for pre-heating of the lamp and heater in order to preserve the life of the lamp and to reduce the time for the heater to attain its necessary temperature.

3,692,409

APPARATUS FOR READING AND ELECTROPHOTOGRAPHICALLY REPRODUCING MICROPHOTOGRAPHS OF VARYING SIZES

Guy Paul Weber, Arques La Bataille, France, assignor to La Cellophane, Paris, France

Filed Feb. 9, 1971, Ser. No. 113,868
Int. Cl. G03b 27/54
U.S. Cl. 355—45 7 Claims



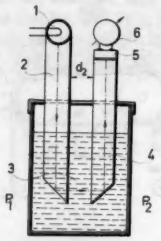
Apparatus for reading and reproducing microphotographs of varying sizes including a source of light and a condenser assembly both adjustable in accordance with the size of microphotographs to be projected, a shutter mirror for selectively supplying light from the microphotograph to a viewing screen or an exposure plane, and a cam controlled electrophotographic reproduction system for automatically producing uniform copies of microphotographs of varying sizes.

3,692,410

APPARATUS FOR DETERMINING THE HEMOGLOBIN CONTENT AND HEMATOGRIT RATIO OF BLOOD SAMPLES

Gyorgy Jurany; Andras Koman, and Pal Zillich, all of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed Jan. 27, 1971, Ser. No. 110,067
Claims priority, application Hungary, Feb. 2, 1970, ME-1183
Int. Cl. G01n 33/16, 21/00
U.S. Cl. 356—40 5 Claims



A measuring arrangement for determining the haemoglobin content and haematocrit ratio of blood samples as well as the derivative of these two values by means of optical prisms and electrodes which are connected with an electronic circuit. This arrangement and device renders possible the observation of the content to be determined or undiluted samples without using a vessel or measuring cell.

3,692,411

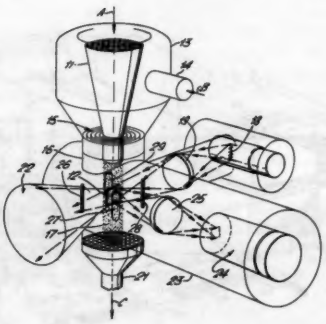
Patent Not Issued For This Number

3,692,412

APPARATUS FOR ANALYSING SUSPENDED PARTICLES

John Norman Chubb, Headington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 12, 1971, Ser. No. 114,983
Claims priority, application Great Britain, Feb. 12, 1970, 6,926/70
Int. Cl. G01n 21/00; G02f 1/36
U.S. Cl. 356—103 6 Claims

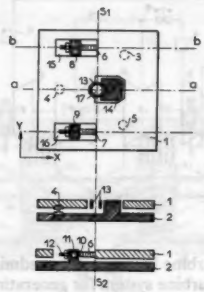


Fibrous particles are distinguished from the other particles by illuminating them, detecting scattered light, and simultaneously applying an electrostatic field, the orientation of which is oscillated or rotated. Fibers tend to align with the moving field and thus produce a "twinkle" in the scattered light.

3,692,413
SYSTEMS FOR ACCURATELY POSITIONING AN OBJECT IN A PLANE BY MEANS OF TRANSLATORY MOVEMENTS

Raymond Marcy; Jean Bouygues, and Michel Lacombat, all of Paris, France, assignors to Thomson-CSF

Filed Nov. 18, 1970, Ser. No. 90,610
Claims priority, application France, Nov. 25, 1969, 6940590
Int. Cl. C01b *11/26*; B26d *7/16*
U.S. Cl. 356—106 10 Claims

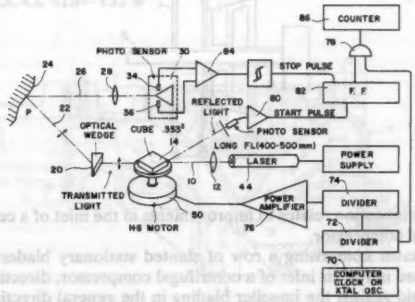


The invention relates to a system for displacing an object supported on a carriage sliding above a bench, in such manner as to follow accurately a rectilinear trajectory. The lateral and rotational deviations of the object from the ideal trajectory are sensed by means of interferometer optical means which control a plurality of electromechanical transducers for cancelling out said deviations.

3,692,414
NON-CONTACTING MEASURING PROBE

Harry L. Hosterman, 1146 Meadow Spur; Charles B. Barnett, 1475 Shanabrook Drive, both of Akron, Ohio, and Clarence A. Ripley, Jr., 809 Locust Drive, Tallmadge, Ohio

Filed Feb. 24, 1971, Ser. No. 118,311
Int. Cl. G01b *11/24*, *11/30*
U.S. Cl. 356—167 6 Claims

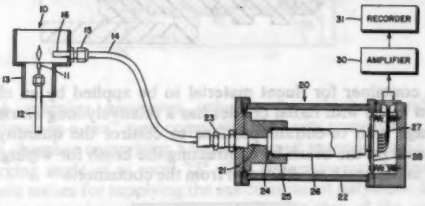


A non-contacting optical probe capable of giving a continuous reading of the distance from a given reference to a contoured surface. A collimated beam is projected on a first optical axis to the surface to be measured. A second optical axis extends from the surface to be measured at an angle to the first optical axis. When the projected beam meets the surface at the point of intersection of the second optical axis, a reflected beam passes along the second optical axis to a sensor which detects this beam. The projected light beam and its optical axis are caused to reciprocate at an angle to the surface, this being accomplished by passing the collimated beam through a rotating prism. The prism is a regular polygon. A second sensor detects the rotation of the prism. The distance to the surface being measured is detected as the interval of time between the detecting of the prism position by the second sensor and the detecting of the reflected light beam by the first sensor.

3,692,415
PHOTOMETRIC ANALYZER EMPLOYING FIBER OPTIC LIGHT TRANSMITTING MEANS

John W. Shiller, 8264 Bingham St., Detroit, Mich.

Filed March 22, 1971, Ser. No. 126,761
Int. Cl. G01j *3/48*; G01n *21/58*; G01j *3/30*
U.S. Cl. 356—187 4 Claims

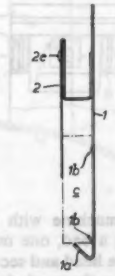


Photometric analyzer having a reaction chamber for exciting samples by thermal, chemical or other energy to emit characteristic light, the reaction chamber usually being operated at elevated temperature. A photometric light sensor is located remotely from the chamber away from the influence of heat therefrom. Characteristic light is transmitted from the chamber to the photometric light sensor by a fiber optic bundle.

3,692,416
CARRIER FOR AN INDIVIDUAL SAMPLE CELL

Cecil Sidney Charles Tarbet, Cambridge, England, assignor to Cecil Instrument Ltd., Cambridge, England

Filed Oct. 5, 1970, Ser. No. 78,122
Claims priority, application Great Britain, Oct. 7, 1969, 49,161/69
Int. Cl. G01n *1/28*
U.S. Cl. 356—244 14 Claims



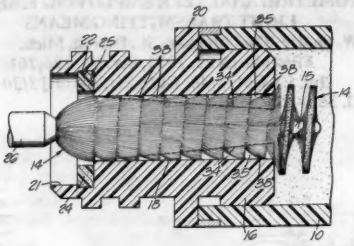
A sample cell carrier receives an optical sample cell directly in a pre-determined alignment, and is inserted without intermediate parts into a carrier slide.

3,692,417

APPLICATOR ASSEMBLY FOR FLUENT MATERIALS

Bruno D. Aston, 14421 Autumn Moon Drive, Hacienda Heights, Calif.

Filed May 12, 1969, Ser. No. 823,864
Int. Cl. A46b 11/00
U.S. Cl. 401—122 6 Claims



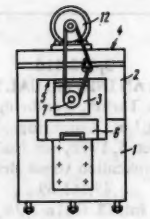
A container for fluent material to be applied by an elongated brush with radial bristles has a relatively long entrance passage with re-entrant portions to control the quantity of material on the brush by contracting the brush for wiping action as the brush is withdrawn from the container.

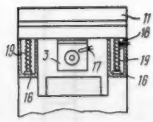
3,692,418

PRECISION BORING MACHINE

Fridrikh Lvovich Kopelev, Komsomolskaya ulitsa, 43, kv. 5, Odessa, U.S.S.R.

Filed Aug. 28, 1970, Ser. No. 67,733
Int. Cl. B23b 39/22, 47/00
U.S. Cl. 408—8 11 Claims





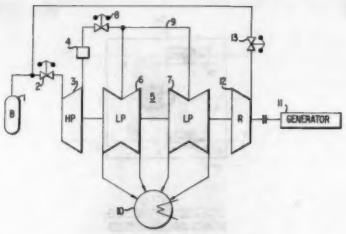
A precision boring machine with compensated thermal deformation comprising a bed, one or two frames carrying, each, at least one spindle head and secured on the bed, and a work table for mounting the workpieces, said table sliding along the bed during boring operations, to compensate for the thermal deformations of the frame and spindle head and to improve the precision of machining, each spindle head is secured on the frame surface facing the work table so that it is located between the frame, and the work table.

3,692,419

ELASTIC FLUID TURBINE SYSTEM

Shigenobu Katagiri, Kanagawa-ken, and Mitsuhisa Yokota, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 3, 1971, Ser. No. 149,640
Claims priority, application Japan, June 4, 1970, 45/47608
Int. Cl. F01b 25/06
U.S. Cl. 415—30 9 Claims



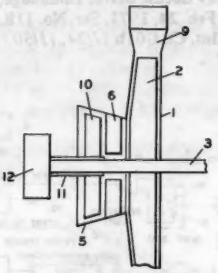
An auxiliary turbine having a steam admission control valve is provided in a turbine system for generating a reverse torque with respect to the main turbine unit. The steam admission control valve is actuated to open if the turbine speed rises above a predetermined value or at a rate of change above a predetermined value, whereby an undesirable turbine overspeed is prevented.

3,692,420

INLETS OF CENTRIFUGAL COMPRESSORS, BLOWERS AND PUMPS

Georg S. Mittelstaedt, 274 73rd St., Brooklyn, N.Y.

Filed April 10, 1970, Ser. No. 27,314
Int. Cl. F01d 13/00
U.S. Cl. 415—62 1 Claim



This invention relates to improvements in the inlet of a centrifugal compressor.

A stator comprising a row of slanted stationary blades is disposed in the air inlet of a centrifugal compressor, directing the fluid against the impeller blading in the general direction of rotation.

A rotor is disposed in front of the stator, the rotor and stator forming a stage. The rotor produces velocity energy, and the stator reduces velocity energy with increase of pressure energy.

The inlet conduit is forwardly enlarged — rearwardly reduced around the rotor-stator stage, to provide a large intake opening and to help precompress the fluid before it enters the impeller.

Plural rotor-stator stages are disposed in the inlet conduit to increase pre-compression in the inlet.

A peripheral aperture is provided in the inlet conduit around the first rotor, or the first rotor is projected from the

lip of the inlet to increase the mass of intake and improve efficiency.

The invention, at least in part, may also be applied to centrifugal blowers and centrifugal pumps.

3,692,421

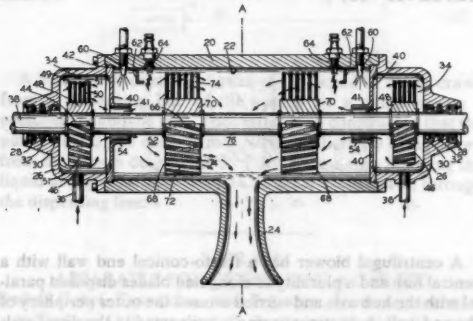
CYCLONIC TURBINE ENGINES

Michael Dworski, 468 French Road, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,557

Int. Cl. F01d *1/34, 1/02*; F02c *3/00*

U.S. Cl. 415—76 **7 Claims**



Turbine engine having cyclonic effect with power and pump rotors having radial wires or serated blades providing helical passageways and having internal combustion for creating expanding gases, or steam, either acting through partitions having uniformly spaced helical jets of decreasing cross section arranged concentric with the rotors.

3,692,422

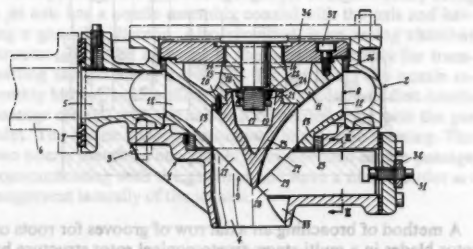
SHEARING PUMP

Jean-Pierre Girardier, Montargis, France, assignor to Etablissements Pierre Mengin, Montargis, France

Filed Jan. 18, 1971, Ser. No. 107,069

Int. Cl. F03d *9/00*; F04d *29/02*; F03b *3/12*

U.S. Cl. 415—121 B **7 Claims**



A rotary shearing pump for circulating liquids containing solid substances in suspension. The pump rotor comprises a hydraulic wheel and a shearing wheel which are assembled in detachable manner and each provided with curved vanes, the vanes of the shearing wheel being joined to those of the hydraulic wheel. The vanes of the shearing wheel cooperate with at least one radial blade for grinding the solid substances and preventing clogging of the pump. The vane profiles of the hydraulic wheel are designed solely in accordance with hydrodynamic conditions. The inlet edges of the shearing-wheel vanes are located on a conical surface which is coaxial with the rotor.

3,692,423

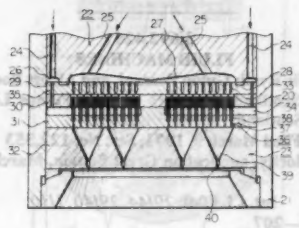
APPARATUS FOR SPINNING SYNTHETIC "ISLANDS-IN-A-SEA" TYPE COMPOSITE FILAMENTS

Miyoshi Okamoto, Osaka; Keiichi Ashida, Kyoto; Koji Watanabe, and Shinzo Taniguchi, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed June 24, 1970, Ser. No. 49,244

Int. Cl. D01d *3/00*

U.S. Cl. 425—131 **14 Claims**



A spinning apparatus valuable for obtaining uniform "islands-in-a-sea" type composite filaments comprises a uniting chamber comprising a funnel-shaped space having a converging angle of at most 75°. The apparatus may further include means for supplying the sea constituent polymeric liquid into a central portion and an outside portion of the uniting chamber, and means for incorporating the island constituent polymeric liquid with the sea constituent polymeric liquid in an eccentric manner.

These means are effective for maintaining the "islands-in-a-sea" type composite stream in the uniting chamber at a favorable equilibrated condition for a long spinning period.

3,692,424

Patent Not Issued For This Number

3,692,425

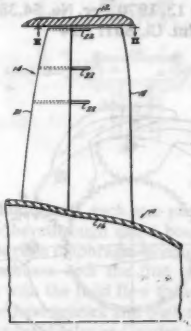
COMPRESSOR FOR HANDLING GASES AT VELOCITIES EXCEEDING A SONIC VALUE

John R. Erwin, Cincinnati, Ohio, assignor to General Electric Company

Filed Jan. 2, 1969, Ser. No. 788,359

Int. Cl. F04d *29/58, 29/38*

U.S. Cl. 415—181 **7 Claims**



In the fan portion of a turbofan engine, rotor blades comprise a primary cambered airfoil and an auxiliary airfoil. Where air flow exceeds a sonic velocity relative to the blades, the throat section between adjacent blades positions the normal air shock wave on the auxiliary airfoil. Each auxiliary airfoil forms a nozzle in combination with the pressure surface of

its adjacent primary airfoil. This minimizes energy losses normally associated with such normal shock waves riding on the suction surfaces of cambered airfoils in regions of relatively thick boundary layer air. Lateral struts projecting from the primary airfoil, and used to position the auxiliary airfoil, create oblique shock waves which weaken the normal shock wave and minimize energy losses associated with a normal shock wave's effect of distributing boundary layer air on an airfoil surface. These features are also effective in reducing the generation of noise.

3,692,426

FLUID MACHINES

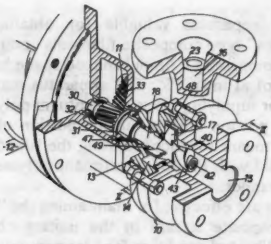
Michael Leslie Ryall; Guido Pezzani, and Albert Bocking, all of Glascow, Scotland, assignors to Weir Pumps Limited, Glascow, Scotland

Filed March 9, 1971, Ser. No. 122,353

Claims priority, application Great Britain, March 31, 1970, 15,292/70

Int. Cl. F04b *29/44, 29/40, 1/10*

U.S. Cl. 415—207 **3 Claims**



A pump including a substantially cylindrical casing in which a radial-bladed impeller is rotatably mounted, has an axial inlet and its outlet is arranged tangentially of the casing periphery. A diffuser is arranged in the outlet passage, the diffuser comprising a cylindrical recess in communication with the pump casing, a diffusing section downstream of said recess which is divergent in the direction of fluid flow and an intermediate section which is convergent in the direction of fluid flow, the intermediate section having a convex periphery.

3,692,427

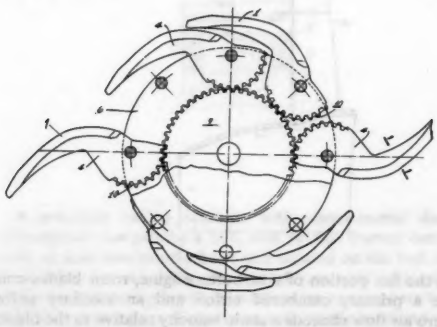
HIGH SPEED MIXING IMPELLER

Jean Risse, Medingen, Grand Duchy, Luxembourg, assignor to Colortex S.A., Grand Duchy, Luxembourg

Filed July 13, 1970, Ser. No. 54,381

Int. Cl. B01f *7/24*

U.S. Cl. 416—143 **2 Claims**



A mixing impeller having vanes mounted at the periphery of a supporting disc, each vane having a root section by which it is pivotally mounted to the disc and an arm extending from the root section. The arms are shaped to correspond substantially to the shape of the supporting disc periphery and the sum of the peripheral developments of all the arms is greater than the periphery of the supporting disc.

3,692,428

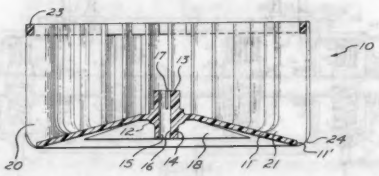
CENTRIFUGAL BLOWER

Daniel F. Bubb, Grafton, and James M. Callihan, Elyria, both of Ohio, assignors to The General Industries Company, Elyria, Ohio

Filed Jan. 12, 1970, Ser. No. 2,182

Int. Cl. F01d *5/04*

U.S. Cl. 416—187 **2 Claims**



A centrifugal blower has a frusto-conical end wall with a central hub and a plurality of elongated blades disposed parallel with the hub axis and carried around the outer periphery of the end wall. A continuous ring is connected to the distal ends of the blades with portions of the blades projecting both radially inwardly and outwardly of the ring. End edge portions of the blades adjacent to the end wall project radially outwardly beyond the periphery of the end wall and are both tapered backwardly in the opposite axial direction and beveled.

3,692,429

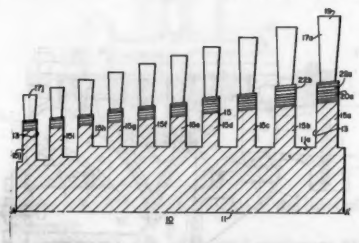
ROTOR STRUCTURE AND METHOD OF BROACHING THE SAME

Arnold H. Redding, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1971, Ser. No. 111,531

Int. Cl. F01d *5/06*

U.S. Cl. 416—201 **9 Claims**



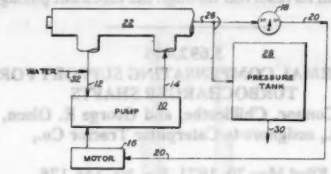
A method of broaching an axial row of grooves for roots or rotor blades in a multi-stage, frusto-conical rotor structure by inclining the angle of reciprocation of the cutting tool of the broach relative to the periphery of the rotor structure and to the axis of rotation of the rotor. The grooves in the largest diameter land are cut to the full size of the broach, while the succeeding lands are cut with a smaller portion of the cutting tool in a diminishing manner, with the smallest diameter land having blade root grooves of smallest cross-sectional area.

The resulting structure is a rotor having a plurality of increasing diameter lands, each land having an annular row of grooves, the grooves in each land axially aligned with the grooves in the adjacent lands to form a plurality of axial rows of grooves. The grooves in the smallest diameter lands have smaller grooves than those in the largest diameter lands.

3,692,430
LIQUID PUMPING SYSTEM

John W. Timmons, 452 W. Chocolate Ave., Hersbey, Pa.

Filed June 18, 1971, Ser. No. 154,554
Int. Cl. F04b 49/00
U.S. Cl. 417—26 8 Claims

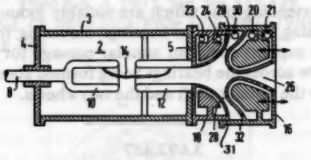


A system for pumping liquid as the liquid is being drawn from a dispensing line of the system by a pump having a prescribed pumping rate. The system is so constructed that the pump will stay on continuously while the liquid is being drawn from the system despite the fact that the pump is pumping the liquid at a greater rate than the liquid is being drawn through the dispensing line.

3,692,431
APPARATUS FOR GENERATING A GAS JET

Rudolf Gebel, Tennelohe, near Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 23, 1970, Ser. No. 83,520
Claims priority, application Germany, Oct. 31, 1969, P 19 54 851.7
Int. Cl. F04f 5/48; G21d
U.S. Cl. 417—183 10 Claims



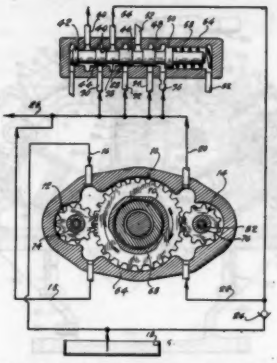
An apparatus for generating a gas jet of high velocity along a jet axis has a nozzle assembly coaxial with the axis and having a gas inlet thereon. Also provided, is an arcing chamber structure disposed adjacent to the nozzle assembly for transmitting the gas along the axis to the gas inlet. The nozzle assembly has two nozzle members one of which has a first nozzle passage coaxial with the axis and communicating with the gas inlet. The nozzle passage terminates in a nozzle opening. The two nozzle members can jointly form a second nozzle passage communicating with the gas inlet and have a nozzle outlet arrangement laterally of the jet axis.

3,692,432
TWO-STAGE POSITIVE DISPLACEMENT PUMP

Po-Lung Liang, Livonia, and Staley L. Pierce, Jr., Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1970, Ser. No. 100,611
Int. Cl. F04b 49/08
U.S. Cl. 417—286 7 Claims

A positive displacement pump comprising a first pumping gear arranged in engagement with second and third pumping gears thereby establishing primary and secondary pump stages; each pump stage being adapted to displace fluid from a low pressure port to a high pressure port, regulator valve means communicating with the high pressure port of each pump for establishing a controlled bypass between said high pressure ports and low pressure fluid supply circuit and a feedback circuit connecting the inlet side of the secondary pumping stage to the outlet side of said regulator valve means whereby a pressure buildup occurs on said inlet side thereby

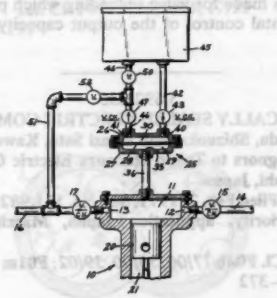


rendering the secondary pump stage inactive when the driven speed of said pumping gears exceeds a predetermined value, both pumps being active during operation at low speeds and the secondary pump being rendered inactive during operation at high speeds.

3,692,433
DAMPING AND AUXILIARY PUMPING APPARATUS

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed March 1, 1971, Ser. No. 122,565
Int. Cl. F04b 17/00, 35/00, 43/06, 45/00
U.S. Cl. 417—382 1 Claim

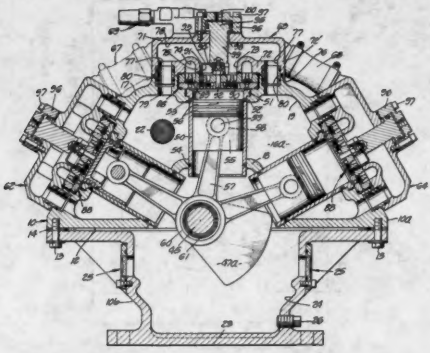


A pulsating fluid pump, such as a piston-type pump, defining a fluid flow therethrough and a housing defining a cavity therein with a flexible diaphragm dividing said cavity into first and second chambers with the first chamber connected in communication with the fluid flow through the pump and the second chamber having inlet and outlet ports therein. Check valves attached to said inlet and outlet ports for allowing fluid to flow only into said inlet and only out of said outlet. A fluid reservoir in communication with said check valves and ports providing a flow of fluid in response to pulsating or oscillatory movement of the diaphragm. A restriction valve in the fluid path from said outlet port to said inlet port for providing a variable amount of restriction or damping action on the movement of the diaphragm.

3,692,434
FLUID COMPRESSOR APPARATUS

Donald M. Schnear, Anaheim, Calif., assignor to Kohlenberger, Inc., Fullerton, Calif.

Filed Nov. 2, 1970, Ser. No. 86,079
Int. Cl. F04b 17/00, 35/00; F01b 1/06, 13/06
U.S. Cl. 417—360 6 Claims



Fluid pumping apparatus, particularly for compressing fluid refrigerants, with a plurality of cylinder piston units mounted in diverging angular relationship, the pistons being connected to a single crankjournal on the crankshaft by one-piece connecting rods with antifriction bearings in the crank connected ends.

The crankshaft is of two-piece construction and releasably connected at the crank journal to facilitate assembly and disassembly of the connecting rods.

The compressor frame is of hollow sectionalized construction and arranged with a crank case which is split at the axis of the crankshaft to facilitate assembly and disassembly of the shaft, the shaft supporting bearings, and the pistons.

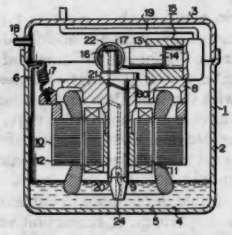
Each cylinder is closed at its outer end by a cavitated head cap with an inlet compartment and outlet exhaust compartment, the inlet compartment being connected to a common fluid inlet cavity formed in the hollow frame, and from which fluid is fed to all of the pumping cylinders.

Provision is made for valve unloading which permits selective incremental control of the output capacity level of the compressor.

3,692,435
HERMETICALLY SEALED ELECTRIC COMPRESSOR

Toshikatsu Iida, Shizuoka, and Bunzi Sato, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 2, 1971, Ser. No. 111,982
Claims priority, application Japan, March 25, 1970, 45/28855
Int. Cl. F04b 17/00, 35/00, 39/02; F01m 9/00
U.S. Cl. 417—372 5 Claims

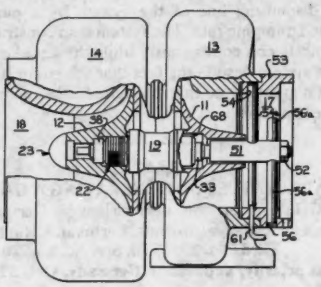


A hermetically sealed electric compressor comprising a casing, a frame received therein so as rotatably to support a revolving shaft and suspending an electric motor and a compressing unit, wherein a lubricant passage provided in the revolving shaft includes a receptacle for trapping solid foreign matter entrained with a lubricant and gas passage for causing said receptacle to communicate with the interior of the casing, thereby eliminating in the receptacle foreign matter and refrigerant from the lubricant supplied to the rotating and sliding parts from its reservoir through the lubricant passage.

3,692,436
THERMAL COMPENSATING SUPPORT FOR TURBOCHARGER SHAFTS

Donald H. Connor, Chillicothe, and George E. Olson, Lacon, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 20, 1971, Ser. No. 145,178
Int. Cl. F04b 17/00, 35/00
U.S. Cl. 417—406 5 Claims

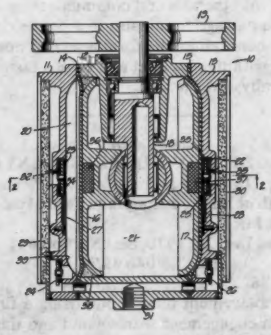


A compensating support assembly for a turbocharger having a turbine wheel and compressor wheel interconnected for rotation together by a tubular shaft, a support shaft being supported in cantilevered fashion by two axially spaced apart sets of radially extending pins which are slidably mounted in the turbine housing, anti-friction bearings mounting the tubular shaft on the support shaft, an annular passage for providing lubricant flow across the bearings being formed about the support shaft by the tubular shaft and the two wheels.

3,692,437
PUMP

William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 745,597, July 17, 1968, abandoned.
This application Jan. 29, 1970, Ser. No. 6,975
Int. Cl. F04b 23/04, 21/02; F01b 19/00
U.S. Cl. 417—533 11 Claims



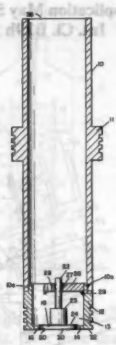
The invention includes a diaphragm pump in which the space behind the diaphragm is evacuated to give the pump a maximum intake efficiency.

3,692,438

POSITIVE DISPLACEMENT PUMP

Rodney E. Schapel, 322 Walnut St., Newport Beach, Calif.

Filed Oct. 21, 1969, Ser. No. 868,025
Int. Cl. F04b *21/04, 15/08*
U.S. Cl. 417—547 1 Claim



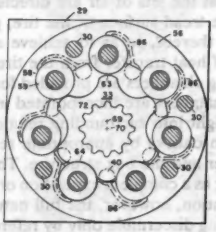
A positive displacement pump with the transfer (or outlet) valve seated in the piston head perpendicular to the piston axis and parallel to the inlet valve. The head space between the valves is thereby reduced to a minimum, eliminating the problem of residual liquid in the head space.

3,692,439

FLUID PRESSURE RESPONSIVE MECHANISM IN A FLUID PRESSURE DEVICE

George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio

Filed Feb. 3, 1971, Ser. No. 112,129
Int. Cl. F01c *1/02*; F03c *3/00*; F01c *19/00*
U.S. Cl. 418—61 6 Claims



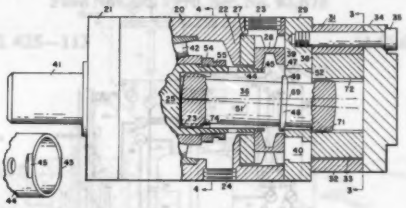
Fluid pressure responsive mechanism in a fluid pressure device including first and second internal fluid chamber housing means and fluid pressure operating means, wherein said fluid pressure operating means include first and second pressure containing means mountable for relative movement. Said first fluid containing means surrounds said second containing means and defines therewith operating chamber means and includes at least an open pocket having a major closed side and a minor open side in communication with said operating chamber means. Said second containing means has at least a contractable portion. Said open pocket has fluid pressure responsive means mounted therein with a minor portion exposed through said minor open said of said pocket for contact with said contractable portion. Said pocket is pressurized by fluid from said first and second fluid chamber housing means through internal wall conduction means extending internally from said fluid chamber housing means and leading internally to said pocket. When the pocket is pressurized, the exposed minor portion of said fluid pressure responsive means tends to seek contact with said contractable portion.

3,692,440

ECCENTRICALLY DISPOSED MALE AND FEMALE SPLINE TEETH

George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio

Filed Feb. 8, 1971, Ser. No. 113,136
Int. Cl. F16d *3/04, 3/18*; F03c *3/00*
U.S. Cl. 418—61 5 Claims



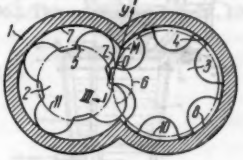
Eccentrically disposed male and female spline teeth having unlike contact engagement therebetween from one succeeding set of teeth to the next and like contact engagement therebetween only once per revolution.

3,692,441

SCREW ROTOR MACHINE FOR COMPRESSIBLE MEDIA

Pavel Evgenievich Amosov, ulitsa Kronverzkaya, 29/37, kv. 87; Vitaly Konstantinovich Smekhov, ulitsa Kolomenskaya, 33/40, kv. 25; Valery Leonidovich Trofimov, ulitsa Matrosova, 12, kv. 8, all of Leningrad; Avely Isaich Shvarts, ulitsa Kosmonavtov, 3, kv. 45; Vladimir Borisovich Shnepp, ulitsa Zarya, 4, kv. 5, both of Kazan, and Alexandr Petrovich Razumovsky, Drovyanoi pereulok, 3, kv. 3, Leningrad, all of U.S.S.R.

Filed May 20, 1971, Ser. No. 145,179
Int. Cl. F01c *1/16, 1/08, 17/12*
U.S. Cl. 418—191 1 Claim



A screw rotor machine for compressible media comprising a driving and at least one driven rotors with conjugated profiles of the addendum of the tooth of the driven rotor and the dedendum of the tooth of the driving rotor. The profile of the flank face of the addendum is a section of an epicycloid butted to a section of an elongated hypocycloid.

ERRATUM

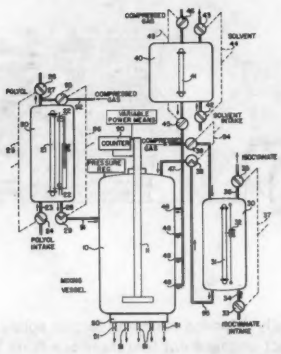
For Class 425—131 see:
Patent No. 3,692,423

3,692,442

APPARATUS FOR THE SIMULTANEOUS INJECTION OF A FOAMING PLASTIC RESIN IN A PLURALITY OF LOCATIONS

Victor L. Gerbert, Rua Gurindibia 162, Apt. #104, Rio de Janeiro, Brazil

Filed Nov. 23, 1970, Ser. No. 91,623
Int. Cl. B29d 27/04
U.S. Cl. 425—4 5 Claims



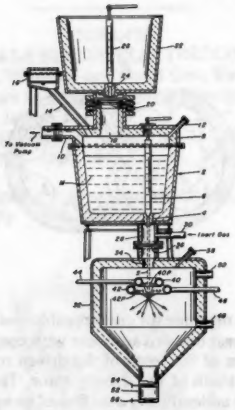
An apparatus and method are disclosed for simultaneously injecting a reactive mixture consisting of components which form a polyurethane or isocyanurate foam out of a plurality of injection tubes leading from a single mixing vessel into several molds or into one mold having several injection openings. Simplification and cost reduction are two of the main advantages of this invention.

3,692,443

APPARATUS FOR ATOMIZING MOLTEN METAL

Max W. Lightner, Mount Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Oct. 29, 1970, Ser. No. 85,044
Int. Cl. B22d 23/08
U.S. Cl. 425—7 8 Claims



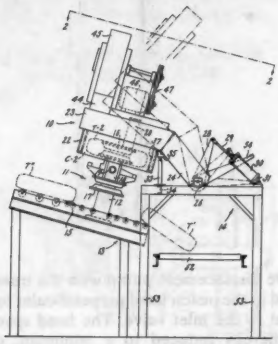
Apparatus for atomizing molten steel or the like into powder in which the molten steel is degassed and then poured in a vertical stream into an atomizing chamber. The metal in the stream is atomized by directing atomizing fluid at the stream.

3,692,444

APPARATUS FOR COOLING TIRES DURING POST INFLATION

Richard H. Hugger, Wyckoff, N.J., and Robert J. Brown, Grosse Pointe Farms, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 822,746, May 7, 1969, abandoned, which is a continuation of Ser. No. 596,122, Nov. 22, 1966, abandoned. This application May 5, 1971, Ser. No. 140,602
Int. Cl. B29h 5/02
U.S. Cl. 425—28 9 Claims



Apparatus for rapidly and uniformly cooling tires under post inflation by means of jets of preferably ambient curing room air is disclosed as comprising a cooling chamber with a peripheral boundary wall adapted axially to surround the tread of a tire on a post inflation chuck, the peripheral boundary wall of the cooling chamber being provided with orifices distributed circumferentially of the chamber and the tire tread so as to provide a specified pattern of air jets. The air handling system is such that the jets of air are directed in the first instance against the tread surface of the tire, preferably in the shoulder regions thereof, so as to achieve a prescribed and controlled rate of heat transfer from the tire to the air. Normally, two cooling chambers are provided for each dual press unit, and such chambers are incorporated in a box structure and may be brought into surrounding relation to the respective post inflation chucks by appropriate relative movement between the latter and the box structure. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,692,445

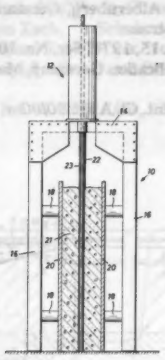
PROGRESSIVE FORM APPARATUS FOR CONCRETE CONSTRUCTION

Konrad Kubitzek, Am Eichenbusch 7, 504 Bruhl near Cologne, Germany

Filed Aug. 20, 1970, Ser. No. 72,563
Claims priority, application Germany, Aug. 26, 1969, P 19 43 242.9
Int. Cl. E04g 11/22
U.S. Cl. 425—63 15 Claims

A progressive form supporting frame box including adjustable poured concrete wall forming panels to be raised along a climb rod disposed in, and withdrawn after completion of, the wall section, in combination with a mechanical lift jack unit comprised of a housing securable to the form box top with the climb-rod therethrough, a lift pair of opposed jaws on opposite sides of the rod a similar pair of support jaws spaced therefrom along the rod, the pairs alternatingly grippable and releasable

for lifting the combination along the rod. The jack is power operated through a portable electric motor unit, such as an



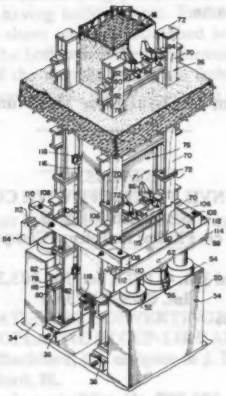
electric drill, acting through a motion converting mechanism directly on the lift jaw pair. The jack may be inverted for use in withdrawing the rod from the finished work.

3,692,446

APPARATUS FOR FORMING AND LIFTING MULTI-STORY COLUMNS IN ONE STORY INCREMENTS

Peter M. Vanderklaauw, Miami, Fla., assignor to Research Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,455
Int. Cl. E04g *13/02*
U.S. Cl. 425—63 **7 Claims**



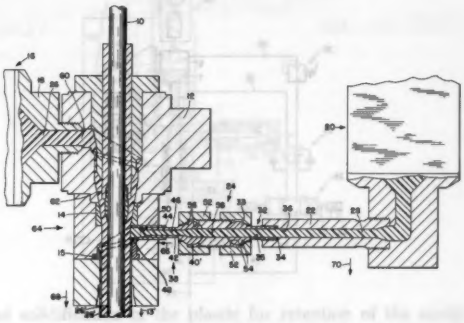
The basic supporting framework of reinforced concrete slabs and columns for a multi-story building is formed in a roof down fashion and erected in a continuous lifting process from the foundation level. Auxiliary column sections, which retain molding formworks for the columns and are supportingly tied to the formed concrete columns, support the load of the building, until the concrete at the bottom hardens, by bearing on adjustable bearing platforms at the foundation. Lifting devices at the foundation cooperate with the supporting auxiliary column sections to push the building up after each floor is built. The lifting devices raise the auxiliary columns off the cooperating adjustable bearing platforms to permit the insertion under and attachment to the auxiliary column assemblies of a further auxiliary column section with the lifting devices operating in step-by-step alternation with support of the auxiliary column assembly on the bearing platforms until the building is raised to the desired height for a new floor at which time a reinforcement cage for a new permanent concrete column to be poured is fixedly inserted in the newly created space within the auxiliary column and attached to the preceding column.

3,692,447

MULTIPLE EXTRUSION APPARATUS

Alden W. Nelson, West Mystic, Conn., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed Nov. 30, 1970, Ser. No. 93,675
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **11 Claims**



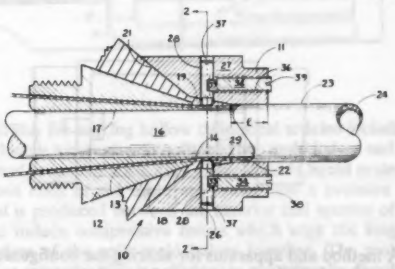
An extruding apparatus wherein a die-head containing dies for forming two or more layers of thermoplastic material, such as on a core passing through the head, is supplied with material by as many extruder barrels as there are layers. The barrels are connected to the die-head at different points, one of the barrels being fixed to the die-head and the other barrel or barrels being connected to the die-head by a connector which compensates for thermal expansion of the barrels and die-head. This connector has a telescoping component and a universal joint component to compensate for thermal expansion in any direction.

3,692,448

CABLE JACKET EXTRUSION APPARATUS AND DIE WITH WIRE POSITIONING MEANS

George N. Menasoff, Hastings-on-Hudson, N.Y., assignor to Anaconda Wire and Cable Company

Continuation-in-part of Ser. No. 740,594, June 27, 1968, Pat. No. 3,531,962. This application July 22, 1968, Ser. No. 746,557
Int. Cl. B21c *3/00*
U.S. Cl. 425—113 **8 Claims**



An extrusion die for cable jackets with embedded drain wires is provided with radially adjustable shoes to position the wires.

3,692,449

DEVICE FOR THE SPRAYING OF SHOE SOLES ONTO SHOE SHAFTS

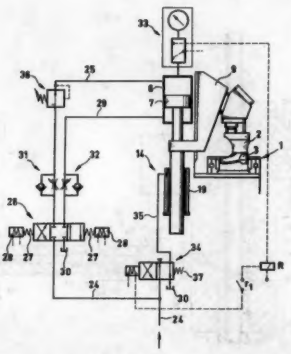
Manfred Niklarz, Rinteln, Germany, assignor to Stubbe Maschinenfabrik G.m.b.H., Vlotho, Germany

Filed Oct. 8, 1970, Ser. No. 79,006

Claims priority, application Germany, Oct. 15, 1969, P 19 51 955.2

Int. Cl. B29f *1/06*

U.S. Cl. 425—119 6 Claims



The improved device disclosed herein is used for the spraying of shoe soles onto shoe shafts. The shoe shafts are drawn over a last that is carried by a movable last slide and are emplaceable upon the sealing edge of molding jaws, which sealing edge bounds a hollow space corresponding to the dimensions of the shoe sole to be formed. The emplacement operation continues until a preselected pressure has been reached between the shoe contour of the shoe shaft and the sealing edge of the molding jaws. When this preselected pressure is reached, an arresting device is actuated to hold the last slide, and thus the last and shoe shaft, against further movement while the soles are formed on the shoe shafts.

3,692,450

APPARATUS FOR THE PRODUCTION OF CONTAINERS

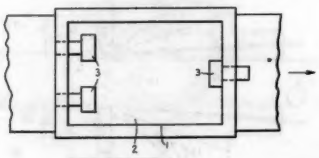
Peter Blandford Feldman, Saint Denijs-Western, Belgium, assignor to Monsanto Chemicals Limited, London, England

Division of Ser. No. 750,225, Aug. 5, 1968, Pat. No. 3,619,443. This application Oct. 29, 1970, Ser. No. 85,136

Claims priority, application Great Britain, Aug. 15, 1967, 37519/67

Int. Cl. B29c *17/04*

U.S. Cl. 425—183 6 Claims



A method and apparatus for altering the configuration of a limited portion of a container defining surface of a mold wall after each cycle of a container thermoforming operation, without removing the mold from its place in a machine, so as to prevent successively produced containers from sticking together when stacked or nested.

3,692,451

APPARATUS FOR PROCESSING AND CONVEYANCE OF STICKY MATERIALS

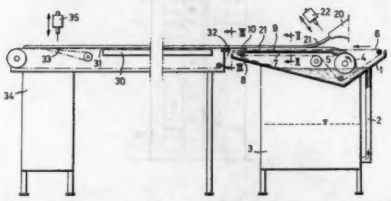
Helmut Sollich, Talle, Albernberg, Germany, assignor to Sollich oHG Industries-trasse

Filed Jan. 15, 1971, Ser. No. 106,744

Claims priority, application Germany, March 10, 1970, P 20 11 175.5

Int. Cl. A21c *00/00*

U.S. Cl. 425—223 4 Claims



The invention describes a method for the processing and conveyancing of sticky materials such, for example, as fillings for chocolate. The invention teaches the formation of a molten layer of a first material and the sticky material is floated thereon for subsequent transport and/or treatment. The invention further discloses apparatus for carrying out the method by providing a lattice conveyor and a support plate disposed thereunder, the bottom layer being formed about said lattice conveyor and maintained in the molten state so that the layer is dragged by the conveyor over the support plate to effect transport of the same.

3,692,452

Patent Not Issued For This Number

3,692,453

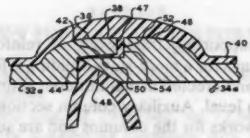
BLADE AND ANVIL PINCH-OFF WITH COMPRESSION SEALING MEANS

Donald J. Quigg, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 4, 1971, Ser. No. 103,372

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 8 Claims

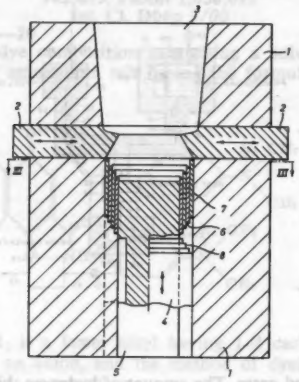


A mold half in a blow molding apparatus has a projecting blade offset from a bottom wall forming surface thereof. This blade cooperates with a recessed area on a second mold half in a relationship similar to that of a halved or lap-spliced joint, to sever a parison and form a compression seal adjacent the severed end. In this way, a seal can be obtained on a parison which is at a temperature below that at which it is generally regarded as sealable.

3,692,454
APPARATUS FOR MAKING HOLLOW PLASTIC ARTICLES

Erwin Kruger, Fidazhofen/Wurtt, Germany, assignor to Ludwig Verpackungen Zach, Schubertstrasse, Germany

Filed June 9, 1970, Ser. No. 44,851
Claims priority, application Great Britain, March 11, 1970, 11,724/70
Int. Cl. B29c *3/00, 17/03*
U.S. Cl. 425—355 11 Claims



Apparatus for heat-shaping plastics articles produces hollow containers having hollow bases. Each article is formed from a plastics sheet which is stretched into a cavity of a matrix or die. The hollow base is then formed by pushing in a lower portion of the sheet in re-entrant fashion. This is done by a punch co-operating in turn with a series of telescopically-slidable sleeves.

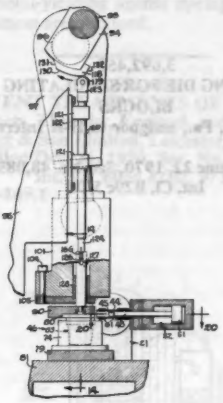
3,692,455
Patent Not Issued For This Number

3,692,456
APPARATUS FOR CONVERTING MOLTEN THERMOPLASTIC IN CUP-LIKE ARTICLES

John A. Foster, Rockford, Ill., assignor to J. L. Manufacturing Co., Rockford, Ill.

Continuation-in-part of Ser. No. 789,183, Jan. 6, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 101,926
Int. Cl. B29c *3/00*
U.S. Cl. 425—412 4 Claims

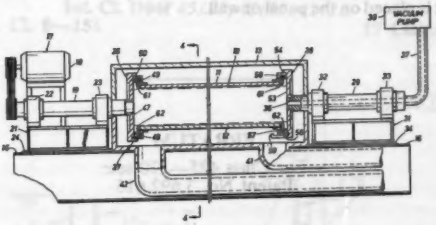
Thermoplastic melted and pressurized in a conventional extruder is confined in and forced through a heated tube to form a molten viscous stream from which globs of accurately measured volumes are cut off successively, immediately deposited one by one into an open mold and converted into a thin walled cup in the telescoping of male and female dies which, when fully closed, define a cavity corresponding precisely in volume and shape to the cup. The dies are mounted in a flywheel actuated press and, after receiving each glob, are closed immediately and rapidly with enough propelling energy to subject the glob, in the final closing of the mold, to an impact of sufficient magnitude to first spread the plastic across the bottom of the cavity, then force an upward flow through the thin side wall thereof and finally into the bead part of the cavity so as to fill and preferably overflow the latter. The dies are maintained below the solidification temperature of the plastic and are held closed long enough in each cycle to insure cooling and solidification of the plastic for retention of the cavity shape and easy ejection of each cup formed in the extremely short cycles of the molding press.



3,692,457
APPARATUS FOR CENTRIFUGALLY FORMING HOLLOW ARTICLES

Charles B. Pekor, Columbus, Ga., assignor to Pekor Iron Works, Columbus, Ga.

Division of Ser. No. 2,778, Jan. 14, 1970, Pat. No. 3,584,105
Filed Feb. 10, 1971, Ser. No. 114,163
Int. Cl. B22d *13/04*; B29c *5/04, 25/00*
U.S. Cl. 425—435 10 Claims



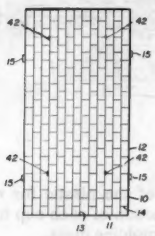
Apparatus for making hollow cylindrical articles includes a mold which is longitudinally split into two mold halves and can be opened to receive a quantity of hardenable liquid material. The open ends of the mold are sealed and a pressure differential is produced between the exterior and interior of the mold to induce compressive forces which urge the longitudinal edges of the split mold halves together. The mold is rotated at a speed which is sufficient to centrifugally distribute the liquid material uniformly in the mold. The compressive forces produced by the pressure differential counteract the centrifugal forces generated during rotation to seal the longitudinal edges of the mold halves together. The mold may be

heated or cooled, depending on the material used, to harden the material after it is uniformly distributed along the mold interior.

3,692,458
WALL SURFACING DIE FOR SIMULATING BUILDING BLOCKS

Albert Kirsch, Erie, Pa., assignor to H-K International, Inc., Erie, Pa.

Filed June 22, 1970, Ser. No. 48,089
Int. Cl. B29c *5/08*
U.S. Cl. 425—469 **2 Claims**



This application discloses a process for forming a layer of masonry-like material on the outside of walls or panels. The process is carried out by using a die which is the same size as the area to be coated. The die is made up of a rigid outside frame with partitions extending between the sides and the ends of the frame. The partitions are rectangular in cross section and are laid out in a pattern which defines the outline of a masonry block of a constructed wall of brick or stone. The material of the partitions have the same thickness as the material to be placed on the wall and the frame of the die is provided with clamps in one embodiment of the invention. The clamps are suitable for clamping it to the panel. In another embodiment of the invention, the die may be supported on suitable supports and lowered into the material after it is placed on the panel or wall.

ERRATUM

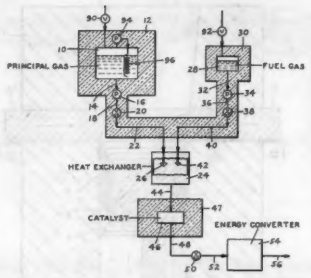
For Class 425—370 see:
Patent No. 3,692,615

3,692,459
PRODUCTION OF HEATED GASEOUS MATERIALS FROM CRYOGENIC LIQUIDS

George H. Erb, Cuttingsville, Vt., assignor to America Velcro, Inc., Manchester, N.H.

Filed May 24, 1971, Ser. No. 146,192
Int. Cl. F23d *11/44*
U.S. Cl. 431—11 **7 Claims**

Production of heated and/or pressurized gaseous products from a source of principal gas in liquefied form which contains oxygen such as liquid air and a separate source of liquefied fuel gas which consists at least in part of hydrogen in free or combined form. The liquefied principal and fuel gases are pumped as liquids at predetermined volumetric rates into heat exchanging means where they are vaporized. The vaporized gases are mixed in the heat exchanger or, when separate heat exchangers are used, the vaporized gases are subsequently mixed and passed over a catalyst to cause all of the hydrogen to combine with at least some of the oxygen to form water, in the form of water vapor, and heat, the heat thus produced being effective to raise the temperature of the entire volume

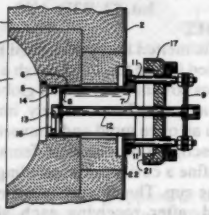


of the mixed gases. The amount of hydrogen, having regard for the amount of oxygen in the mixture is so regulated, by control of the relative rates of pumping of the liquefied materials, that the mixture of gases is not combustible in the ordinary sense, that is the mixture cannot be ignited and will not support a self perpetuating flame at normal temperatures or at the temperature to which the mixture is heated by catalytic reaction. The energy contained in heated and/or pressurized gaseous product is utilized in any desired way, such as driving suitable engines, turbines or the like, or it may be utilized for heating of enclosed spaces.

3,692,460
INDUSTRIAL BURNER

Charles W. Morck, Jr., Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Feb. 16, 1971, Ser. No. 115,636
Int. Cl. F23d *15/04*
U.S. Cl. 431—348 **7 Claims**



The invention is directed to an industrial burner that will operate, without change of parts, with any fuel gas and with a wide turndown range.

CHEMICAL

3,692,461

HAIR DYE COMPOSITION AND METHOD OF DYEING HUMAN HAIR THEREWITH

Gregoire Kalopissis, Paris, Jack Bertrand, Tremblay-les-Gonesses, and Andree Bugaut, Bologne-sur-Seine, France, assignors to Societe Anonyme dite, l'Oreal, Paris, France

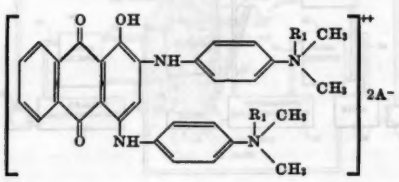
No Drawing. Continuation-in-part of application Ser. No. 428,867, Jan. 28, 1965. This application May 15, 1970, Ser. No. 37,903

Claims priority, application France, Feb. 5, 1964, 962,659, Patent 1,430,091

Int. Cl. D06p *3/00*

U.S. Cl. 8—10 6 Claims

A hair dye composition comprising a solvent and a quaternary ammonium salt having the formula



in which R_1 is a lower alkyl having 1–4 carbon atoms and A^- is an anion, and the method of dyeing human hair with this composition.

3,692,462

DYEING SILK AND WOOL WITH CHROMABLE FIBER-REACTIVE AZO DYESTUFFS AND POLYGLYCOL-ETHER AMINES

Gerhard Back, Loerrach, Germany, and Heinz Abel, Reinach, Basel-Land, Arthur Buehler, Rheinfelden, and Alfred Litzler, Itingen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,618

Claims priority, application Switzerland, Mar. 10, 1969, 3,548/69

Int. Cl. C09b *62/50*; D06p *1/38*

U.S. Cl. 8—43 13 Claims

A process for dyeing natural protein fibres wherein dyeing is performed at 80 to 110° C. in the presence of a nitrogen-containing polyglycol derivative of an aliphatic compound of high molecular weight, a chromium-releasing agent and a water-soluble fibre-reactive, chromable mono- or disazo dyestuff containing groups capable of complex formation, at least one sulfonic acid group imparting solubility in water, and a fibre-reactive acylamino group.

3,692,463

DYEING SILK AND WOOL FIBERS IN AQUEOUS BATH OF METALLIZABLE FIBER-REACTIVE AZO DYES AND NITROGEN-CONTAINING POLYGLYCOLS WITH AFTER-TREATMENT USING METAL RELEASING AGENT

Gerhard Back, Loerrach, Germany, and Heinz Abel, Reinach, Arthur Buehler, Rheinfelden, and Alfred Litzler, Itingen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,208

Claims priority, application Switzerland, Mar. 10, 1969, 3,549/69

Int. Cl. C09b *45/04*

U.S. Cl. 8—43 14 Claims

The present invention relates to a process for dyeing natural protein fibers, preferably wool, with metallizable fiber-reactive monoazo dyestuffs in the presence of a nitrogen-containing polyglycol compound. Upon after-treatment with metal-yielding agents dyeings of excellent wet and light fastness are obtained.

3,692,464

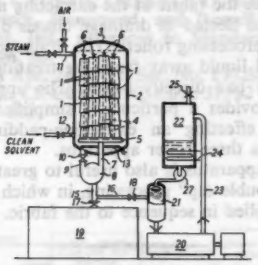
SOLVENT TREATMENTS OF TEXTILES

Will Furness, Thurnby, England, assignor to Samuel Pegg & Son Limited, Leicester, England

Filed Oct. 26, 1970, Ser. No. 83,772

Int. Cl. B05c *8/02*, *9/12*

U.S. Cl. 8—149.1 4 Claims



In the dyeing of textile substrates by the action of a dye liquor comprising a dyestuff having as a vehicle an organic solvent, a method of and an apparatus for, performing the dyeing on substrate arranged in a sealed treatment vessel and for subsequently removing the dye liquor from the substrate, whilst the latter remains in the said vessel, by the passage of steam through the substrate under reduced pressure.

3,692,465

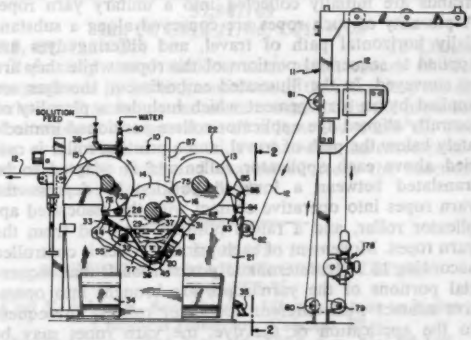
THREE ROLL PROCESSING APPARATUS, AND METHOD FOR UTILIZATION THEREOF

Eugene Cohn, Great Neck, and Robert Frezza, Carle Place, N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Filed May 11, 1971, Ser. No. 142,128

Int. Cl. D06f *45/10*, *45/12*, *45/26*

U.S. Cl. 8—151 17 Claims



The disclosure is directed to an apparatus for the processing of web materials, particularly, but not exclusively,

fabrics in the open width. The apparatus preferably comprises three processing rollers arranged with their axes in parallel relation and arranged in an inverted triangular configuration. The central, lower roller is in contact at spaced points with the upper processing rollers at the entry side and exit side of the system. A first processing nip is formed at the entry side and typically may be utilized for extracting. A second processing nip is formed at the exit side and typically is used for padding. All of the processing rollers are resiliently covered.

The fabric is directed downwardly through the first or extracting nip, around the bottom of the central roller and upwardly through the second or padding nip. A pan of treating solution is disposed under the central, lower roller, and the lower extremities of this roller are immersed in the treating solution so that the fabric is impregnated with solution as it travels around the roller. Liquid squeezed from the fabric at the extracting nip flows laterally and is co llected in drainage chutes disposed at the ends of the processing rollers. The drainage chutes direct the extracted liquid away from the treating solution disposed in the pan directly below. The apparatus of the invention provides a particularly simplified and reliable system for effecting an extracting-padding processing sequence in a three roller apparatus.

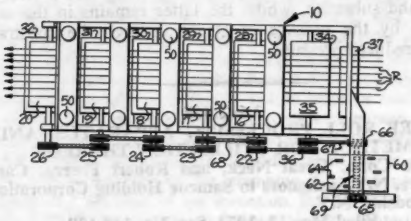
The new apparatus is also useful to great advantage in so-called "double dip" processing, in which reactive solutions are applied in sequence to the fabric.

3,692,466

METHOD FOR SPACE DYEING YARNS

Harry L. Mercer, 106 Sharon St., Cheraw, S.C. 29520

Filed Oct. 23, 1970, Ser. No. 83,451
Int. Cl. B05c *1/08*; D06p *7/00*
U.S. Cl. 8—151.2 **6 Claims**



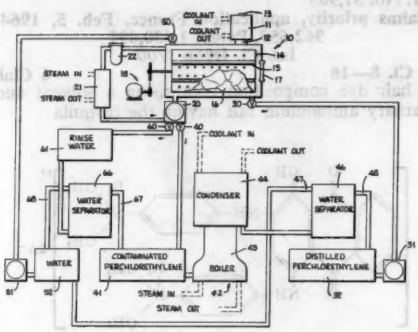
A method and apparatus for the high volume production of space dyed yarns wherein a large number of yarn strands are initially collected into a unitary yarn rope. A plurality of such ropes are conveyed along a substantially horizontal path of travel, and differing dyes are applied to sequential portions of the ropes while they are so conveyed. In the illustrated embodiment, the dyes are applied by an arrangement which includes a plurality of laterally aligned dye applicator rollers positioned immediately below the path of travel, and a printing roller is carried above each applicator roller and is adapted to be translated between a lowered position to depress the yarn ropes into operative contact with the associated applicator roller, and a raised position removed from the yarn ropes. Movement of each printing roller is controlled according to a predetermined program such that sequential portions of the yarn ropes are brought into operative contact with different applicator rollers. Subsequent to the application of the dye, the yarn ropes may be passed through a suitable fixation device, and then separated into the component yarn strands by a suitable comb or the like and wound either onto individual spools in a quiller or directly onto a section beam.

3,692,467

TEXTILE TREATING PROCESSES AND APPARATUS INVOLVING BOTH WATER AND AN IMMISCIBLE SOLVENT

Larry L. Durr, Indianapolis, and Byron Jan Clay, Brownsburg, Ind., assignors to Textile Technology, Inc., San Diego, Calif.

Filed July 6, 1971, Ser. No. 159,851
Int. Cl. D06f *43/08*
U.S. Cl. 8—158 **20 Claims**



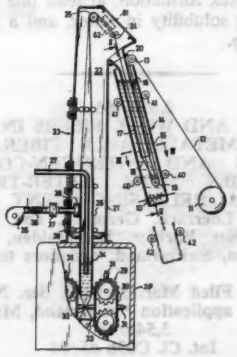
Process and apparatus are disclosed which relate to the use of water and a liquid halogenated hydrocarbon in textile processing. A device for rapidly and efficiently separating the two liquids is disclosed and uses a glass wool containing coalescer and a Teflon coated metal water screen. A method is also disclosed for removing the solvent from textiles.

3,692,468

APPARATUS FOR STERILIZING PACKAGED MATERIAL

Willi Loliger and Rudolf Schmied, Konolfingen, Switzerland, assignors to Alpura AG, Bern, Switzerland

Filed July 21, 1970, Ser. No. 56,900
Claims priority, application Switzerland, July 29, 1969, 11,531/69
Int. Cl. A61l *3/00, 5/00, 7/00*
U.S. Cl. 21—58 **12 Claims**



The strip of packaging material is led through the liquid sterilization chamber in a looped path so as to expose

the strip for an extended period of time. The exit end of the looped path communicates in sealed relation with an enclosed chamber which is maintained in a sterile atmosphere. An extended sterilizing path is thus provided to kill germs that may otherwise exist on the packaging strip.

3,692,469

APPARATUS FOR APPLYING EXTERMINATING AND PRESERVATIVE COMPOSITIONS FOR WOOD

Franklin Peace, Philadelphia, Pa., assignor to National Volume Sales Corporation, Philadelphia, Pa.

Filed Oct. 26, 1970, Ser. No. 84,094
Int. Cl. B27k 3/02
U.S. Cl. 21—63 13 Claims

A container for a wood-penetrating preservative and insecticide composition. Composition in the container contacts a wood member to be treated, and penetrates into it. In one embodiment, the composition is dispensed from the container by gravity feed through a small opening. Adhesive material or conventional fasteners may be used to fasten the container to a member to be treated. The composition, when substantially viscous, may be retained in the container prior to use by means of a removable sealing member.

3,692,470

CRYSTALLINE ZEOLITE ZSM-10

Julius Ciric, Glassboro, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,193
Int. Cl. C01b 33/28
U.S. Cl. 423—328 6 Claims

A family of zeolites, known as ZSM–10, having the X-ray diffraction interplanar spacings of Table 1 of the specification; the preparation of same from a reaction mixture containing silica, alumina, potassium oxide, an oxide of 1,4-dimethyl-1,4-diazoniabicyclo(2,2,2)octane, and water; and organic compound conversion with a catalytically-active form of said zeolite.

3,692,471

PROCESS FOR REMOVAL OF POLYSULFIDES

John Edwin Lyberger, Kingsville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Aug. 27, 1970, Ser. No. 67,565
Int. Cl. C01f 11/00; C01g 3/12
U.S. Cl. 423—561 5 Claims

The process disclosed herein comprises the treatment of a solution of barium sulfide or strontium sulfide containing undesired polysulfides for removal of these polysulfides by reaction with metallic copper which effects removal of the polysulfide by reaction therewith to produce insoluble sulfides.

The barium or strontium sulfide solution is thereby sufficiently reduced in polysulfide content to permit subsequent precipitation of the corresponding carbonate without contamination by polysulfides.

3,692,472

RECOVERY OF SULFUR DIOXIDE

Warren E. Winsche, Bellport, Edward Wirsing, Jr., Mattituck, and Richard H. Wiswall, Jr., Brookhaven, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,370
Int. Cl. C01b 17/60; B01j 11/32
U.S. Cl. 423—244 3 Claims

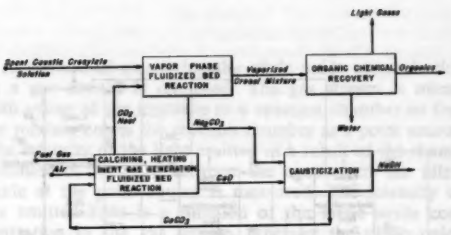
A process for recovering SO_2 from a gas in which the gas is passed through a bed of reactive UO_2 to absorb the SO_2. The saturated bed is reconstituted by passing sulfur vapor diluted by an inert gas through the bed to reduce the latter back to UO_2.

3,692,473

METHOD AND APPARATUS FOR REGENERATING SPENT CAUSTIC CRESYLATE SOLUTIONS

James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,332
Int. Cl. C01d 1/20; C07c 37/22
U.S. Cl. 423—183 5 Claims



Disclosed is an apparatus and process for reclaiming sodium hydroxide and phenolics from spent caustic cresylate solutions utilizing a pair of fluid bed reactors in series.

3,692,474

PREPARATION OF METAL NITRIDES

Scott Gordon Arber, Chessington, and Oswald William John Young, Surbiton, England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 795,083, Jan. 29, 1969, now Patent No. 3,607,042. This application Nov. 3, 1970, Ser. No. 86,615
Claims priority, application Great Britain, Nov. 26, 1969, 57,947/69
Int. Cl. C01b 21/06; C01f 7/00
U.S. Cl. 423—344 10 Claims

Refractory metal nitrides, such as aluminum nitride, are produced by heating a mixture of the refractory metal, carbon and a zinc or cadmium compound in the presence of nitrogen at a temperature of at least about 950° C. The zinc or cadmium compound is reduced to the corresponding elemental metal and evaporated from the reaction mass to leave the desired nitride.

3,692,475

METHOD FOR MAKING CRYSTALLINE ZEOLITE Y

Carl E. Johnson, Brookhaven, Miss., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,148
Int. Cl. C01b 33/28
U.S. Cl. 423—329 2 Claims

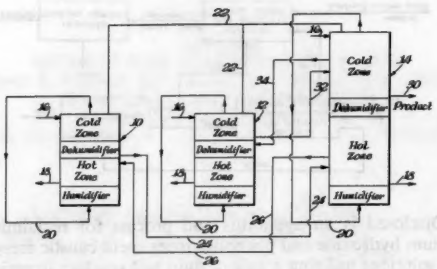
Crystalline zeolite Y is produced in good yield in a short period of time from aqueous alkaline silica-contain-

ing solutions and sodium aluminate solutions by the expediency of using elevated temperatures, good agitation and by the careful control of the alumina concentration of the aqueous aluminate solution.

3,692,476
METHOD OF PREPARING $OClF_3$
Donald Pilipovich, Canoga Park, and Carl J. Schack, Chatsworth, Calif., assignors to North American Aviation, Inc.
No Drawing. Filed May 13, 1966, Ser. No. 551,490
Int. Cl. C01b *11/00, 11/02*
U.S. Cl. 423—466 4 Claims

1. The method of making $OClF_3$ comprising reacting $ClNO_3$ with F_2 and recovering $OClF_3$.

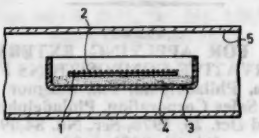
3,692,477
PROCESS FOR ENRICHMENT BY COUNTER-CURRENT MASS TRANSFER
Victor R. Thayer, R.D. 3, Newark, Del. 19711
Filed Aug. 4, 1969, Ser. No. 847,305
Int. Cl. C01b *5/02, 19/16;* B01d *59/22*
U.S. Cl. 423—580 6 Claims



A chemical compound, element or isotope of an element is concentrated or enriched by physical or chemical exchange between two fluids passing countercurrently to each other in a plurality of concentrating units (vessels or towers). Each of the vessels is capable of operating independently. A feed fluid is supplied simultaneously to each of the units which concentrate and enrich it. The degree of enrichment occurring in a particular vessel depends upon the physical length of the particular vessel. The enriched products produced in the shorter vessels are fed, in contradistinction to prior art processes, to the longer vessels for further concentration. The process may be operated continuously regardless of the shut-down of one or more of the individual vessels utilized in the process.

3,692,478
METHOD OF MANUFACTURING SILICON CARBIDE WHISKERS
Wilhelmus Franciscus Knippenberg and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands
Filed Feb. 2, 1970, Ser. No. 7,593
Claims priority, application Netherlands, Feb. 1, 1969, 6901661
Int. Cl. C01b *31/36, 21/06;* C01f *7/02*
U.S. Cl. 423—345 2 Claims

Whiskers of approximate desired diameter are grown on a uniform rough surface of a substrate by means of a nucleating substance due to the presence of crystallites projecting from the surface the lateral dimensions of



which at the surface approximately correspond in size to the thickness of the crystals to be grown.

3,692,479
PREPARATION OF BINARY BORIDES, CARBIDES AND SILICIDES
Geoffrey W. Meadows, 312 S. Marshall St., Kennett Square, Pa. 19348, and Paul C. Yates, 2120 Shipley Road, Wilmington, Del. 19803
No Drawing. Continuation-in-part of application Ser. No. 250,442, Jan. 9, 1963, which is a continuation-in-part of application Ser. No. 824,943, July 6, 1959. This application Sept. 10, 1968, Ser. No. 758,830
Int. Cl. C01b *31/34, 33/06, 35/00*
U.S. Cl. 423—291 2 Claims

Binary carbides, borides and silicides, such as tungsten carbide, having an average particle size of less than a micron, are prepared by reacting a pair of suitable reactants such as tungstic oxide and calcium carbide, in a molten metal halide bath such as sodium chloride, at a temperature of between 200 and 1200° C. in the presence of an alkali metal or alkaline earth metal reducing agent. The binary compounds thus produced are particularly useful in preparing hard, dense refractory materials.

3,692,480
METHOD FOR CONTROLLING A SULFUR RECOVERY PROCESS
Jacobus Snoek and Jaap E. Naber, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed May 19, 1971, Ser. No. 144,834
Claims priority, application Netherlands, May 27, 1970, 7007611
Int. Cl. C01b *17/04*
U.S. Cl. 423—239 7 Claims

A sulfur recovery process based on the reaction of hydrogen sulfide with sulfur dioxide wherein at least part of the sulfur dioxide is derived from the regeneration with a reducing gas of a loaded solid acceptor used in flue gas desulfurization is controlled by measuring the difference between the volume of reducing gas used in regeneration and the volume of off-gas obtained from regeneration, and employing this difference to control, either directly or indirectly, the composition of the gas mixture to the sulfur recovery process.

3,692,481
METHOD OF DETERMINING THE CONCENTRATION OF INORGANIC SULFUR COMPOUNDS IN A GAS
James E. Mitchell, Westfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Mar. 30, 1971, Ser. No. 129,600
Int. Cl. G01n *31/12*
U.S. Cl. 23—230 PC 10 Claims

The concentration of inorganic sulfur compounds is determined by measuring the ion concentration decrease

of a flame, produced by the combustion of a mixture comprising a hydrocarbon, hydrogen and oxygen, which results from introducing said inorganic sulfur-containing compound into said flame. Preferably the inorganic sulfur compound is chosen from the group consisting of SO_2, SO_3, H_2S, COS, S, H_2SO_4 and H_2SO_3, and the ion concentration decrease is measured by a decrease in current flowing through an electrical circuit of which the flame is an integral part. In a particularly preferred method, a gas chromatograph fitted with a flame ionization detector and a recorder is used to measure the concentration of said inorganic sulfur compound by introducing said inorganic compound into a reference mixture, comprising H_2, O_2 and hydrocarbon, and measuring the ion concentration decrease.

3,692,482

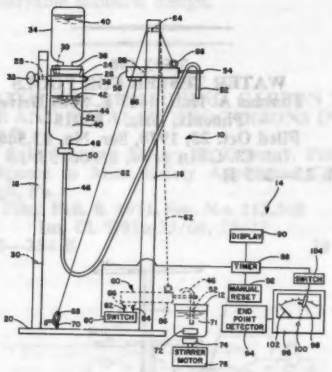
Patent Not Issued For This Number

3,692,483

TITRATION METHOD AND APPARATUS

James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Feb. 22, 1971, Ser. No. 117,283
Int. Cl. G01n *31/16*
U.S. Cl. 23—230 R **7 Claims**



A method and apparatus for performing titrations in which a substantially constant hydrostatic head of titrant is maintained in a titrant reservoir. An elongated capillary tube is connected at one end to the reservoir and the other end of the tube, constituting the titrant delivery tip, is normally positioned at least as high as the level of titrant in the reservoir so that no titrant flows through the tube. A sample is delivered to a cell below the titrant delivery tip. The titrant delivery tip is lowered to adjacent the cell whereby titrant will flow by gravity into the cell to commence a titration reaction. Means are provided for detecting the end point of the titration reaction in the cell. The time elapsed between the introduction of titrant into the cell and the time such end point is reached is measured. After the end point has been detected, the titrant delivery tip is raised to the level of titrant in the titrant reservoir to cease further flow of titrant into the sample cell. Since a constant hydrostatic head of titrant is provided, the titrant will flow at a contant known rate into the cell. By knowing the rate of flow of titrant and the time that titrant flows into the sample cell, the titer of the sample may be determined.

3,692,484

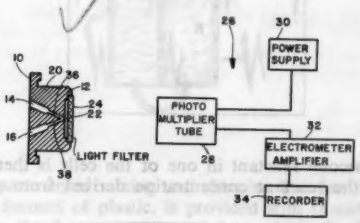
Patent Not Issued For This Number

3,692,485

NITRIC OXIDE DETECTION

Radhakrishna M. Neti, Brea, and Colin C. Bing, Placentia, Calif., assignors to Beckman Instruments, Inc.

Filed July 2, 1971, Ser. No. 159,266
Int. Cl. G01n *21/26*
U.S. Cl. 23—232 R **10 Claims**



A method of measuring the nitric oxide concentration in a gas stream is disclosed. The gas stream is mixed with ozone at the entrance to a reaction chamber so that the mixture enters the reaction chamber as a point source. The intensity of the light emitted as a result of the chemiluminescent reaction between the ozone and the nitric oxide at the point source is measured. The intensity of the emitted light is a function of the nitric oxide concentration in the gas stream, whereby the nitric oxide concentration is measured. Apparatus for measuring the nitric oxide concentration in a gas stream is also disclosed. The apparatus includes a walled vessel having a reaction chamber and having two inlet passages and an exhaust passage in the wall thereof. The two inlet passages converge together to a common inlet opening into the chamber. A light window is positioned in the wall of the chamber opposite and in close proximity to the common inlet so that the light emitted by a chemiluminescent reaction between the gases and the two inlet passages at the common inlet can be measured as a point source. Means are associated with the light window for measuring the light emitted by the chemiluminescent reaction.

3,692,486

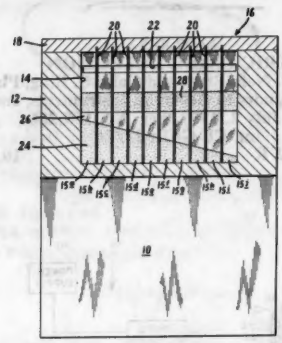
METHODS AND APPARATUS FOR OBTAINING THE QUANTITATION AND THE CONCENTRATIONS OF PRECIPITIN REACTIONS AND PARTICIPATING MOLECULES IN BIOLOGICAL FLUIDS

William G. Glenn, Ingleside, Tex., assignor to Cybertek, Inc., New York, N.Y.

Filed July 12, 1971, Ser. No. 161,541
Int. Cl. C12k *1/06, 1/10*; G01n *33/16*
U.S. Cl. 23—230 B **8 Claims**

A method and apparatus for obtaining the quantitation and the concentrations of precipitin reactions and participating molecules in biological fluids. A continuous gradient of reference reactant stabilized in a gel formation is positioned in an enclosed chamber. The continuous gradient is then calibrated by dividing the chamber into a plurality of cells, by which procedure each cell has a different reactant concentration. A second reactant containing the molecules of interest in a biological solution is then placed interfacing the reference reactant in each of

the cells and the precipitin reaction allowed to proceed. The equivalence point between the reference reactant and



the second reactant in one of the cells is then observed and the reactant concentration derived from a prepared table.

3,692,487

COAGULOMETER CAPSULE

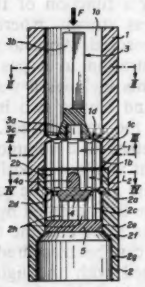
Manuel Claude Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Mar. 17, 1970, Ser. No. 20,340

Claims priority, application Switzerland, Mar. 19, 1969, 4,124/69

Int. Cl. G01n *11/14, 33/16, 33/26*

U.S. Cl. 23—253 R **22 Claims**



A two piece tubular capsule for conducting coagulation tests on blood and other liquids having three separate chambers, the first two communicating with each other, defined by two frangible membranes and a solid disc. A shaft having a recessed stirring end is attached to the first membrane and cooperates with a stirring slug attached to said second membrane. The shaft is moved axially to break the second membrane and mix the liquids in each chamber. The shaft is then rotated relative to the body of the capsule to stir the mixed liquid to determine the coagulation time of the sample liquid being tested.

3,692,488

BACTERIOLOGICAL IDENTIFICATION SYSTEM

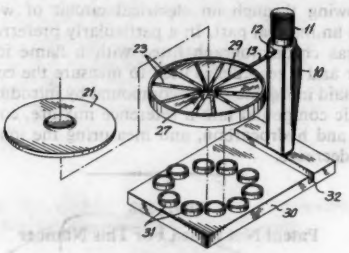
Lazar M. Schwartz, 660 Overlook Terrace, New York, N.Y. 10040

Filed Sept. 24, 1970, Ser. No. 74,975

Int. Cl. B65b *3/04;* **B67d** *5/00;* **B67c** *3/00*

U.S. Cl. 23—253 R **9 Claims**

A plurality of test-tubes, containing samples to be tested, are surmounted by a circular distribution manifold and located in sockets provided in a baseplate. Individual transfer passages radiate from a central supply chamber in the manifold and terminate in orifices aimed at the open tops of the test-tubes. A reagent material is expelled



from a flexible container, under the action of cam-operated clamp plates, into the central supply chamber of the manifold and distributed to the test-tubes through the radial passages.

3,692,489

Patent Not Issued For This Number

3,692,490

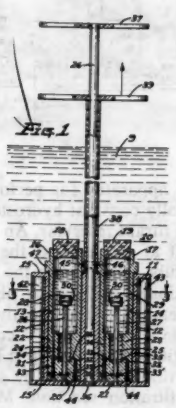
WATER TESTER FOR POOLS

Thomas A. Hall, 3417 E. Sells Drive, Phoenix, Ariz. 85018

Filed Oct. 23, 1970, Ser. No. 83,540

Int. Cl. G01n *1/14, 21/06, 33/18*

U.S. Cl. 23—253 R **8 Claims**

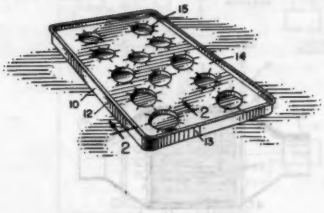


An apparatus for checking the acidity, alkalinity and the chlorine content of pool water by simultaneously withdrawing into two separate containers predetermined samples from a given depth in the pool, simultaneously injecting into each sample a given amount of a different testing reagent, and simultaneously ejecting the water samples tested from each container after observing the test results.

3,692,491
COMPLEMENT FIXATION TESTING TRAY

Elmer F. Trentelman, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed June 30, 1971, Ser. No. 158,446
Int. Cl. C12b *1/08*; C12k *1/10*; G01n *33/16*
U.S. Cl. 23—253 R 8 Claims

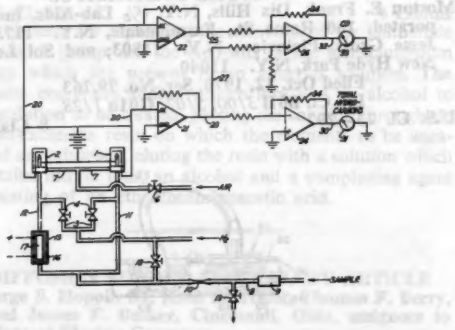


An agar-containing tray for use in a complement fixation testing procedure for visually determining whether a sample of body fluid contains a given antigen or antibody. Sensitized animal (sheep) red cells (hemolysin-sheep red blood cell complex) are embedded in the agar medium. Wells are provided in the agar layer, each of the wells having a plurality of slits radiating therefrom. When the test results are negative, indicating the absence of the given antibody or antigen in the fluid introduced into a well, hemolysis occurs along the margins of the slits and about the border of the well to produce a readily observable sunburst design.

3,692,492
APPARATUS FOR MEASURING CARBON MONOXIDE AND TOTAL HYDROCARBONS IN GAS SAMPLE

Albert A. Poli, Jr., and Sidney D. Delaune, Pittsburgh, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Feb. 8, 1971, Ser. No. 113,548
Int. Cl. G01n *25/00, 25/22*
U.S. Cl. 23—254 E 10 Claims

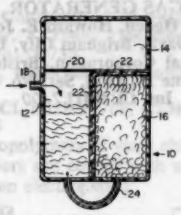


First and second means for measuring hydrocarbons in a gas sample are provided. A conduit delivers part of the sample to the first means, and a second conduit delivers the rest of the sample to the second means at the same time. In the second conduit there is a reactor for converting carbon monoxide to methane, so the portion of the sample delivered by the second conduit will contain a greater amount of hydrocarbons than the part delivered by the first conduit.

3,692,493
LYMPHOCYTE TRANSPORT BAG

Paul I. Terasaki, Los Angeles, Calif., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

Filed Sept. 22, 1970, Ser. No. 74,276
Int. Cl. B01l *3/00*
U.S. Cl. 23—259 6 Claims

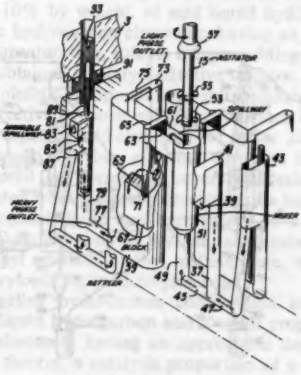


A compartmented mixing and shipping bag for blood. The bag, formed of plastic, is provided with three compartments; the first compartment, into which the blood is injected, contains nylon to which the undesirable granulocytes adhere. A second compartment contains a flushing ingredient and the seal between the first and second chambers is broken and the flushing medium is used to flush the lymphocytes from the first chamber into a third chamber. The third chamber is separated from the first two chambers and is used as a shipping container.

3,692,494
BANK OF MIXER SETTLERS

André Bathellier, 1 Boulevard Colbert, 92 Sceaux, France, and Gérard Faudot, 118 Rue de Javel, 75 Paris 15 eme, France

Filed Feb. 7, 1969, Ser. No. 797,636
Claims priority, application France, Feb. 14, 1968, 139,892
Int. Cl. B01d *11/04*
U.S. Cl. 23—270.5 3 Claims



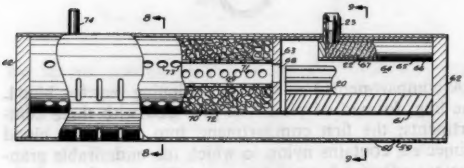
A bank of mixer-settlers consisting of a plurality of serially-disposed stages each comprising a substantially vertical supply duct for a relatively heavy liquid phase which is fed into said duct by overflow, a substantially vertical supply tube for a relatively light liquid phase which is also fed into said tube by overflow, a mixer

which is joined to the lower portions of the duct and of the tube and provided with agitation means, a settler which is connected to the top portion of the mixer by means of a spillway and joined to the supply tube of the preceding stage, a block within each settler for reducing the cross-sectional area at the level of the interface.

3,692,495
GAS GENERATOR

Fred E. Schneiter, Ogden, Howard E. Jorgensen, Hyrum, and Leland E. Davis, Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 19, 1970, Ser. No. 47,788
Int. Cl. B01j 7/00
U.S. Cl. 23—281 **3 Claims**

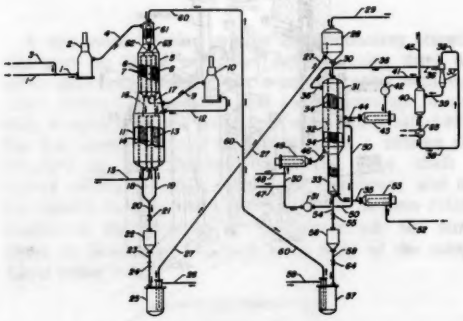


A gas generator, suitable for filling inflatable structures in the presence of humans has a special, nontoxic, solid fuel in an orificed pressure vessel, ignition means therefor, and coolant means for cooling the gases produced on combustion of the fuel before they enter an inflatable structure.

3,692,496
APPARATUS FOR CONTINUOUS REFORMING-REGENERATION PROCESS

Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Original application Sept. 25, 1969, Ser. No. 860,905. Divided and this application Apr. 19, 1971, Ser. No. 135,266
Int. Cl. B01j 9/12
U.S. Cl. 23—288 G **6 Claims**

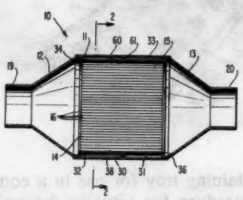


An apparatus system for operating a continuous reforming-regeneration process comprising a plurality of stacked reforming reactors and employing a platinum catalyst wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without the removal of any reactor from the process stream.

3,692,497
CATALYTIC EXHAUST GAS TREATMENT APPARATUS

Carl D. Keith, Summit, John J. Mooney, Wyckoff, and Louis J. Vanmansart, Upper Saddle River, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed May 20, 1971, Ser. No. 145,266
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 R **11 Claims**

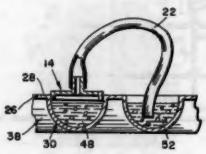


A catalytic apparatus for purifying gases, e.g. the exhaust gas of an internal combustion engine, in which a unitary, catalytic element having gas flow paths therethrough, is secured within a surrounding casing by at least one end flange, preferably two end flanges, a resilient, flexible member surrounding said catalytic element, and at least one surface projecting inwardly from the interior wall of the casing and in contact with the resilient, flexible member. Rotation of the catalyst is prevented by one or a plurality of such surfaces, preferably at least three. When using a plurality of these surfaces it is preferred that at least two or at least three be spaced-apart from each other by at least about 90° with respect to the center of the casing. Longitudinal movement of the catalyst is prevented by the flanges and further movement of this type can also be counteracted by providing a recess in the exterior surface of the catalytic element or an inwardly projecting surface on the interior wall of the casing, and in contact with the resilient, flexible member.

3,692,498
CHEMICAL TESTING APPARATUS

Morton E. Frank, Dix Hills, N.Y. (% Lab-Aids, Incorporated, 160 Rome St., Farmingdale, N.Y. 11735); Jesse Gross, Plainview, N.Y. 11803; and Sol Lesh, New Hyde Park, N.Y. 11040

Filed Oct. 12, 1970, Ser. No. 79,763
Int. Cl. B01l 3/00, 5/02; G01n 1/28
U.S. Cl. 23—292 **8 Claims**



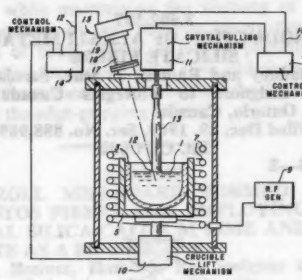
Dimensionally identical recesses in a molded plastic body are adapted to receive drop quantities of chemical ingredients. Any of the recesses may receive a funnel member to seal a chamber from which gas generated by chemical reaction may be conducted through flexible tubing for collection or delivery to an adjacent recess.

3,692,499

CRYSTAL PULLING SYSTEM

Dmetro Andrychuk, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1970, Ser. No. 68,282
Int. Cl. B01j 17/18
U.S. Cl. 23—301 18 Claims



There is disclosed a new method and apparatus for the controlled pulling of crystal rods for use in semiconductor component manufacturing. Changes in the diameter of the crystal rod are monitored by opto-electrically detecting changes in the physical location of a halo surrounding the rod at an interface between the rod and the molten material from which it crystallizes. A linear electrical signal is produced by a monitoring device for use in controlling the parameters affecting crystal diameter during the pulling process. An electrical signal proportional to changes in the level of the molten material within the crucible is also produced by the monitoring device.

3,692,500

PROCESS FOR THE SEPARATION OF ELEMENTS OF THE LANTHANIDE GROUP AND ELEMENTS OF THE TRANSPLUTONIUM GROUP WHICH ARE PRESENT IN AN AQUEOUS SOLUTION

Bernard Coupat, Montferrand, and Claude Musikas, Bourg-la-Reine, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 14, 1968, Ser. No. 775,797
Claims priority, application France, Nov. 17, 1967, 128,624
Int. Cl. C01g 56/00
U.S. Cl. 423—7 4 Claims

A process for separating the elements of the lanthanide rare-earth group and the elements of the transplutonium group which are present in an aqueous solution. The process comprises adding nitrate ions and an alcohol to the solution to be treated, passing the solution through an anion-exchange resin on which the elements to be separated are adsorbed, eluting the resin with a solution which contains nitrate ions, an alcohol and a complexing agent consisting of an ethyleneaminoacetic acid.

3,692,501

DIFFUSION BONDED SUPERALLOY ARTICLE

George S. Hoppin III, Reed E. Yount, Thomas F. Berry, and James F. Barker, Cincinnati, Ohio, assignors to General Electric Company

Original application July 11, 1969, Ser. No. 841,093. Divided and this application Mar. 26, 1971, Ser. No. 128,400
Int. Cl. B32b 15/00
U.S. Cl. 29—196.6 5 Claims

An improved diffusion bonded, age hardenable joint between superalloy members results from a method which combines the benefits of vacuum high temperature brazing and pressure solid state diffusion bonding through use of an age hardenable bonding powder related to the superalloy and including temperature depressants selected from B, Si, Mn, Cb, Ta and their mixtures. The method avoids the need for pressure during the diffusion bonding portion.

3,692,502

METAL-COATED THERMOPLASTIC ARTICLE

Gunther Bernhardt, Hangelar, Robert Buning, Oberlar, and Werner Trautvetter, Spich, Germany, assignors to Dynamit Nobel AG, Troisdorf, Bezirk-Cologne, Germany

No Drawing. Continuation of application Ser. No. 718,904, Apr. 4, 1968. This application Oct. 29, 1970, Ser. No. 78,733
Claims priority, application Germany, Apr. 7, 1967, D 52,737
Int. Cl. B32b 15/08; C23b 5/60
U.S. Cl. 29—195 2 Claims

Substrates of copolymers of vinyl chloride with maleate or fumarate diesters are coated with metal by electroless deposition and then electroplated.

3,692,503

ACTIVATED MANGANESE CONTAINING ADDITIVE FOR FUELS

Ira Kukin, West Orange, N.J., assignor to Apollo Chemical Corp., Clifton, N.J.

No Drawing. Filed Feb. 26, 1969, Ser. No. 802,684
Int. Cl. C10l 1/32, 9/10
U.S. Cl. 44—4 14 Claims

An activated manganese containing additive composition for fuels for retarding the corrosiveness of the ash and the ash slag buildup of such fuels upon combustion, such fuels including vanadium containing fuels and alkali, sulfur and iron containing coals. The said additive composition comprises a preparation of a manganese compound preferably and a metal salt of an alkyl-aryl sulfonate brought to a particle size in the range of 0.25 to 20 microns.

3,692,504

PROCESS FOR GELLING NORMALLY LIQUID HYDROCARBONS AND PRODUCT PRODUCED

Rufus V. Jones and Peter J. Canterino, Bartlesville, Okla., assignors to Phillips Petroleum Company

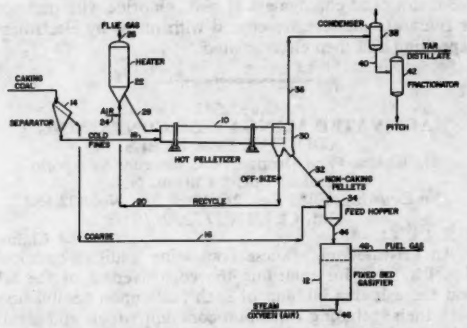
No Drawing. Filed May 19, 1953, Ser. No. 356,098
Int. Cl. C10l 7/02
U.S. Cl. 44—7 E 30 Claims

1. The preparation of a gelled hydrocarbon product which comprises dissolving in a normally liquid hydrocarbon 1–10% by weight, of said liquid hydrocarbon, of a synthetic hydrocarbon elastomer, having an appreciable degree of unsaturation, soluble therein, adding to the solution thus obtained a catalyst effective to cause reaction between an olefinic compound and sulfur dioxide in a proportion effective to cause said reaction, then adding 0.5–20% by weight, of said elastomer, of sulfur dioxide to the resulting mass and then allowing the mass to react and to stand until gel formation occurs, the said elastomer being selected from the group consisting of a homopolymer of a conjugated diene and copolymers of a conjugated diene with at least one of styrene, alkyl-substituted styrenes, methyl acrylate, methyl methacrylate, methyl vinyl ketone, acrylonitrile, methacrylonitrile.

24. A gelled hydrocarbon composition containing a normally liquid hydrocarbon and a small proportion of a synthetic elastomer having an appreciable degree of unsaturation therein, a catalytic proportion of a catalyst effective to cause a reaction between an olefinic compound and sulfur dioxide, and sulfur dioxide, at least a portion of said hydrocarbon, sulfur dioxide, synthetic elastomer and catalyst being present as a reaction product of said sulfur dioxide and said synthetic elastomer in said hydrocarbon and at least a portion of the said hydrocarbon, elastomer and sulfur dioxide being present in said composition

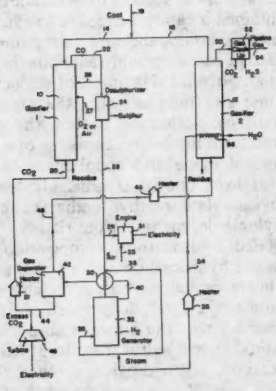
in a physical gel structure; the said elastomer being selected from the group consisting of a homopolymer of a conjugated diene and copolymers of a conjugated diene with at least one of styrene, alkyl-substituted styrenes, methyl acrylate, methyl methacrylate, methyl vinyl ketone, acrylonitrile, methacrylonitrile.

3,692,505
FIXED BED COAL GASIFICATION
Eric H. Reichl, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.
Filed Apr. 5, 1971, Ser. No. 131,330
Int. Cl. C10j *3/16*
U.S. Cl. 48—206 **3 Claims**



The gasification of a caking coal in a fixed bed is effected by feeding a suitable mixture of coarse caking coal and non-caking pellets of substantially the same size made by pelletizing fines, previously separated from the caking coal, in a hot peletizing rotary kiln, whereby a substantially improved feedstock is provided for the fixed bed gasifier.

3,692,506
HIGH BTU GAS CONTENT FROM COAL
Cecil J. Johnson, Columbia City, Ind., assignor to Total Energy Corporation, Columbia City, Ind.
Filed Feb. 13, 1970, Ser. No. 11,151
Int. Cl. C10j *3/00;* **C10k** *3/00*
U.S. Cl. 48—210 **5 Claims**

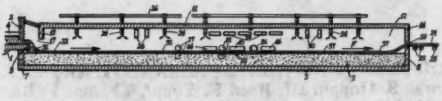


A unitary process for the production of high methane content gas employing a single supply of coal, char or other carbonaceous material which is supplied to first and second gasifiers. The first gasifier produces carbon monoxide which is transferred to a hydrogen generator for reaction with steam to produce hydrogen. The hydrogen produced thereby is reacted with the carbonaceous materials in the second gasifier to produce the high methane content gas.

3,692,507
PRODUCTION OF ALKALI METAL SILICATE FIBERS
Kurt P. Gladney and Ramesh P. Rao, Sarnia, Ontario, Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada
Filed Dec. 29, 1969, Ser. No. 888,989
Int. Cl. C03b
U.S. Cl. 65—2 **12 Claims**

Foamable fibers of alkali metal silicate glass are prepared by dispersing flowing fine streams of molten glass to centrifugation or to a high velocity blast of gas thereby forming fibers of random length and average diameters in the range 0.1 to 1.0 mil, and hydrating the resulting staple fibers to a moisture content of 5 to 40% by treatment with steam or a water spray. If desired, fiberizing may be effected by centrifugally dispersing the molten streams in a first step and then subjecting the dispersed streams to the high velocity gas blast. The gas is preferably superheated steam, hot compressed air or a fuel gas flame. The thus-hydrated product may be foamed by conventional foaming techniques.

3,692,508
PROCESS FOR THE MANUFACTURE OF FLAT GLASS
Georges Prislan, Boussois, France, assignor to Boussois Souchon, Neuvesel, Paris, France
Filed June 15, 1970, Ser. No. 45,975
Claims priority, application France, July 1, 1969, 6922172
Int. Cl. C03b *18/00*
U.S. Cl. 65—91 **1 Claim**



Process for the manufacture of a fire-polished glass ribbon by longitudinal displacement thereof over the surface of a molten metal bath in which it is intended to obtain a predetermined thickness of smaller value than the glass-bath equilibrium thickness by gripping the edges of the ribbon in order to regulate the rate of displacement thereof along the bath, bringing the ribbon to a temporary plastic state and subjecting said ribbon to a longitudinal tractive force in order to produce acceleration and drawing-out, stabilizing the ribbon at the desired predetermined

thickness and then cooling it in order to permit withdrawal from the bath. The ribbon having been gripped laterally while having a viscosity which is substantially within the range of 10^7 to 10^8 poises in the drawing zone located downstream of the gripping points, a transverse central band of the ribbon which is located between two edge bands is re-heated so that the viscosity of the central band should be at least forty times lower than that of the edge bands while maintaining the viscosity of said edge bands at a sufficiently low value to ensure that they are still capable of being drawn. It is thus possible to carry out a controlled extension of the glass ribbon in the drawing zone without thereby transmitting the tractive forces upstream of the edge-gripping rollers.

3,692,509

LEHR ROLL MILLBOARD FORMED FROM ASBESTOS FIBERS AND EMPLOYING COLLOIDAL SILICA-CALCIUM LIME AND BENTONITE AS A BINDER

Richard C. Breiner, Hatboro, Pa., assignor to Nicolet Industries, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 641,469, May 26, 1967. This application Aug. 10, 1970, Ser. No. 62,629

Int. Cl. C03b *13/16*; C04b *43/04*; D21f *5/18*

U.S. Cl. 65—118 14 Claims

An asbestos millboard particularly useful for the manufacture of lehr rolls consists essentially of asbestos fibers, such as 15–45% by weight chrysotile asbestos fibers, 40–55% by weight anthophyllite asbestos fibers and 0–25% by weight amosite asbestos fibers. As a binder for the asbestos in the millboard there is present a substantially calcium silicate free admixture consisting essentially of colloidal silica, calcium lime and bentonite clay, in the amounts 1.5–7% by weight, 3–9% by weight and >1.5–5% by weight, respectively, based on the millboard.

3,692,510

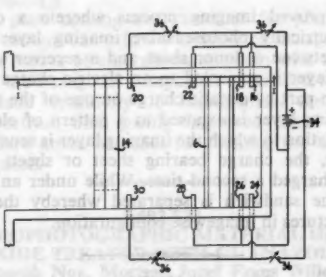
FLOW AND EDGE CONTROL IN VERTICAL SHEET DRAWING

Arnold J. Goldberg, Lower Burrell, and Leonard A. Knavish, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 1, 1970, Ser. No. 68,713

Int. Cl. C03b *15/08*

U.S. Cl. 65—203 1 Claim



Four pairs of electrodes are provided, protruding through side walls of a drawing kiln. One pair on each side is positioned to the front of the meniscus, and the other pair is to the rear. Electric current is supplied to each of the above-mentioned pairs, whereby electrical heating is provided to spring or edge zones of the glass in the drawing kiln. The manner of heating described prevents devitrification, provides warmer edges, and makes it possible to adjust as desired the electric heating effect in a given spring or edge zone.

3,692,511

LIMESTONE GRANULATION

Joseph F. Wilson and Wallace D. Southworth, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation of abandoned application Ser. No. 694,391, Dec. 29, 1967. This application Nov. 17, 1970, Ser. No. 90,458

Int. Cl. C05c *9/00*

U.S. Cl. 71—29 7 Claims

Limestone particles are granulated by charging a binder material and water to a tumbling bed of particulate limestone and separating granules of a specific size from the tumbled material. The granules are of suitable size for use in conventional fertilizer application equipment, are essentially round, and extremely hard, yet decompose readily upon contact with the soil.

3,692,512

CONTROLLING AGRICULTURAL CHEMICAL SPRAY DRIFT WITH FOAM

Norman Henry Sachnik, P.O. Box 1484, San Angelo, Tex. 76901

No Drawing. Continuation-in-part of applications Ser. No. 561,740, June 30, 1966, and Ser. No. 634,551, Apr. 28, 1967. This application June 3, 1969, Ser. No. 830,088

Int. Cl. A01n *5/00*

U.S. Cl. 71—65 15 Claims

Chemicals, such as insecticides, herbicides, soil sterilants or other chemicals for agricultural purposes, are incorporated in a dense foam. The foam is made by mixing foaming materials and, generally, low surface tension surfactants with water. Then the liquid is expanded to about 8 times the liquid volume by mixing it with air. Said foam has a wide scope of applications and has proved particularly advantageous in large-scale operations.

3,692,513

PROCESS FOR PRODUCING FOAMED METAL

Crayton G. Hall, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,788

Int. Cl. C22c *1/08, 21/00, 23/00*

U.S. Cl. 75—20 F 6 Claims

Foamed metals having improved cellular structure are produced by melting the metal, thickening the molten metal with a gaseous viscosity increasing agent, degassing the thickened metal, and foaming the degassed, thickened metal with a heat decomposable foaming agent. Degassing is accomplished by either cooling the molten metal just to solidification so that residual thickening gas is squeezed out by metal contraction, or the molten metal is subjected to a vacuum which removes residual thickening gas.

3,692,514

ALLOY STEEL CONTAINING COPPER AND NICKEL ADAPTED FOR PRODUCTION OF LINE PIPE

Peter Paul Hydrean, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 721,086, Apr. 12, 1968. This application Dec. 13, 1968, Ser. No. 783,746

Int. Cl. C22c *37/10*

U.S. Cl. 75—124 10 Claims

A low alloy steel combining strength and toughness and adapted for line pipe production. Steel contains carbon, nickel, manganese, copper, chromium, molybdenum, columbium and usually silicon, the balance being essentially iron. Chromium and molybdenum are correlated such that the total thereof is at least about 0.5%. Unnecessary to liquid quench.

3,692,515

FERROUS ALLOYS AND ABRASION RESISTANT ARTICLES THEREOF

Stewart G. Fletcher and Walter T. Haswell, Jr., Latrobe, Pa., assignors to Latrobe Steel Company

No Drawing. Continuation-in-part of application Ser. No. 429,621, Feb. 1, 1965. This application July 30, 1968, Ser. No. 748,631

The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed

Int. Cl. C22c *39/20*

U.S. Cl. 75—126 A 7 Claims

An abrasion resistant alloy stock material consisting essentially of carbon about 1% to 4.25%, said carbon being in excess of that necessary to impart a desired hardenability, silicon about 1.5% maximum, manganese about 1.5% maximum, chromium about 10% to about 15%, molybdenum less than about 2%, titanium about 0.5% to about 5%, tungsten less than about 3%, nickel less than about 3%, cobalt less than about 5%, vanadium less than about 5%, sulfur up to about 0.25% and the balance iron with residual impurities in ordinary amounts, said titanium being combined with said excess carbon in a weight ratio of 4:1 and the vanadium with carbon in a weight ratio of about 4.2 (V—1):1, said stock material having been reduced by working at least about 5% in cross-section.

3,692,516

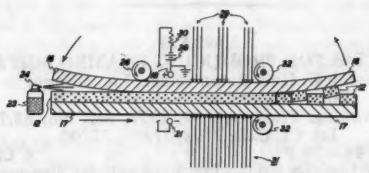
MANIFOLD IMAGING METHOD

Ivar T. Krohn and Geoffrey A. Page, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 1, 1969, Ser. No. 838,280

Int. Cl. G03g *13/00*

U.S. Cl. 96—1 R 11 Claims



An improved imaging process wherein a cohesively weak electrically photosensitive imaging layer is sandwiched between a donor layer and a receiver layer. While subjected to an electric field the imaging layer is exposed to an imagewise pattern of electromagnetic radiation from the receiver side and to uniformly distributed electromagnetic radiation from the donor side. Upon separation of the sandwich, the imaging layer fractures in imagewise configuration with a positive image adhering to one of the donor or receiver layers and a negative image adhering to the other layers.

3,692,517

PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING AN INSULATING CARRIER LIQUID CONTAINING AN UNSATURATED COMPOUND

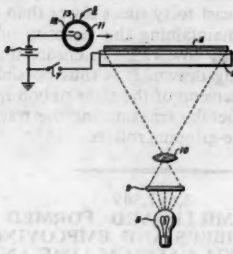
Raymond L. Jelfo, Sodus Point, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 29, 1967, Ser. No. 641,981

Int. Cl. G03g *5/00, 7/00, 17/00*

U.S. Cl. 96—1 R 1 Claim

This invention relates to a monochromatic imaging system utilizing an imaging suspension comprising a photoresponsive pigment dispersed in an insulating carrier liquid. The insulating liquid carrier utilized in the process comprises a substantially non-volatile, unsaturated organic composition which is in liquid form at room temperature. The suspension is interpositioned between a pair of electrodes and subjected to a potential difference while simultaneously being selectively exposed to a light image. The monochromatic imaging process of the present invention produces relatively high contrast, background free images in a single pass system.



3,692,518

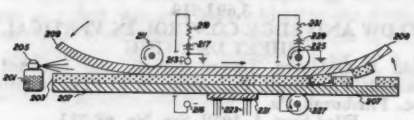
MANIFOLD IMAGING PROCESS

Gedeminas J. Reinis and Vsevolod Tulagin, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Apr. 18, 1969, Ser. No. 817,442

Int. Cl. G03g *13/00*

U.S. Cl. 96—1 R 10 Claims



An improved imaging process wherein a cohesively weak electrically photosensitive imaging layer is sandwiched between a donor sheet and a receiver sheet. The imaging layer is subjected to an electric charge provided at least in part by a static charge on one of the sheets and the imaging layer is exposed to a pattern of electromagnetic radiation to which the imaging layer is sensitive. Subsequently, the charge bearing sheet or sheets are electrically charged a second time. While under an electrical charge the sandwich is separated whereby the imaging layer fractures in imagewise configuration.

3,692,519

ELECTROPHOTOGRAPHIC COLOR PROCESS

Toru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 14, 1969, Ser. No. 841,256

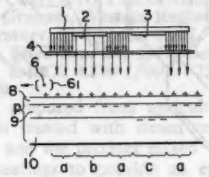
Claims priority, application Japan, July 23, 1968, 43/52,077

Int. Cl. G03g *13/00*

U.S. Cl. 96—1.2 20 Claims

An electrophotographic process for preparing a multicolored copy from a multi-colored original comprises applying a primary charge on a photosensitive member, irradiating an optical image of a color which it is desired to

reproduce, applying a secondary discharge contemporaneously with irradiating an optical image of colors other than said desired color, exposing the whole surface of the photosensitive member if necessary, developing the formed



latent image and transferring the image corresponding to the image of the desired color onto a transfer medium, and repeating these steps for each color of the multi-colored original.

3,692,520

DEVELOPING ELECTROSTATIC IMAGES EMPLOYING FATTY ACID ESTERS TO INHIBIT DEVELOPER BUILD-UP

Joseph Mammino and Alan B. Amidon, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,105
Int. Cl. B05c *1/16, 1/20;* G03g *9/04*
U.S. Cl. 96—1.3 19 Claims

An electrostatographic imaging system wherein a hydrogenated vegetable oil derivative is added to the photoconductor surface in the presence of a liquid developer. The additive may be separately added or be dispersed in the liquid developer and to provide improved cycling ability of the imaging surface.

3,692,521

PANCHROMATIC RASTER PLATE FOR ELECTROPHOTOGRAPHIC USE

Walther von Grable, Konigstein, Germany, assignor to A. N. Zimmerman & Co., Neuss, Germany

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,858
Int. Cl. G03g *5/02*
U.S. Cl. 96—1.5 3 Claims

A new plate coating and structure for photographic use. The coating comprises a mixture of hexagonal selenium in a matrix of amorphous selenium with the distribution of the hexagonal component controlled to achieve panchromatic sensitivity to illumination through the visible spectrum and greatly improved tonal rendition of large dark areas. Methods for forming the matrix are also disclosed.

3,692,522

ELECTROPHOTOGRAPHIC MATERIAL OF ZINC OXIDE TREATED WITH GUANAZOLE

Robert Joseph Noe, Mortsel, Jozef Frans Willems, Wilrijk, Albert Lucien Poot, Kontich, and Karel Eugeen Verhille, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Original application June 6, 1969, Ser. No. 831,253, now Patent No. 3,634,080. Divided and this application July 21, 1971, Ser. No. 164,821
Claims priority, application Great Britain, June 6, 1968, 27,045/68
Int. Cl. G03g *7/00*
U.S. Cl. 96—1.8 23 Claims

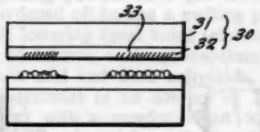
Electrophotographic recording material containing photoconductive zinc oxide treated with guanazole and processes of electrophotographic recording using such materials. These materials are characterized by low memory effect, improved charging characteristics and are capable of accepting either positive or negative charges to obtain either positive or negative copies.

3,692,523

PROCESS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND LIQUID DEVELOPER USED THEREFOR

Yasuo Tamai and Satoru Honjo, Asaka, Japan, assignors to Fuji Photo Film, Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Feb. 5, 1970, Ser. No. 8,955
Claims priority, application Japan, Feb. 5, 1969, 44/8,516
Int. Cl. G03g *9/04*
U.S. Cl. 96—1.4 4 Claims



A process for converting an electrostatic latent image on an insulating recording layer to a material image and fixing the material image, the process comprising the steps of developing with a liquid developer comprising a nonpolar carrier liquid having a specific volume resistivity not less than 10^{10} ohms-cm., the liquid containing (1) finely-divided gelatin particles having a mean particle diameter between 0.01 and 20 microns where the amount of the gelatin particles is from 0.001 to 5% by weight of the carrier liquid and (2) a synthetic resin soluble in the carrier liquid but insoluble in at least one of an isoparaffinic solvent and a fluorochlorinated hydrocarbon solvent where the concentration of the resin is not lower than that of the gelatin particles and not more than 30% by weight of the carrier liquid to form an image of gelatin, and then rinsing the gelatin image with at least one of the isoparaffinic solvent and the fluorochlorinated hydrocarbon solvent to thereby insolubilize the resin to fix the gelatin image on the insulating image recording layer, bringing the fixed gelatin image into contact with an aqueous solution of a water soluble dye thereby imbibing the dye into the fixed gelatin image, and placing a dye-receiving sheet comprising a surface coating which easily absorbs water-soluble dyes so that the dyed gelatin image contacts the surface layer, whereby the dye in the gelatin image is transferred onto the sheet, forming a final dye print.

3,692,524

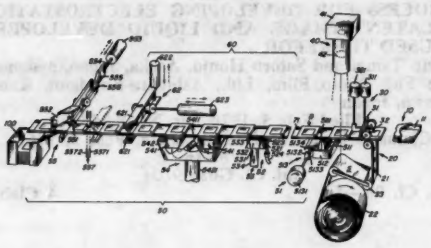
PRINTING FROM COLOR TRANSPARENCIES

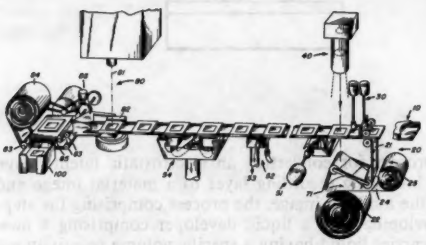
Max A. Bideau, Joinville-le-Pont, Charles E. Chauveton, Villiers-sur-Marne, Alain Fruchard, Nogent-sur-Marne, and Marc Laurens, Clichy-sous-Bois, France, assignors to Eastman Kodak Co., Rochester, N.Y.

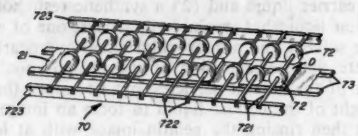
Filed Sept. 3, 1970, Ser. No. 69,204
Int. Cl. G03c *5/06, 7/04, 7/16*
U.S. Cl. 96—6 1 Claim

High quality prints of a projection transparency may be inexpensively obtained by use of an unsharp black-and-white mask sandwiched over such transparency. The mask serves not only to sharpen the print image, but also to modify the overall contrast of the "sandwich," whereby printing may be made on color reversal paper. The mask

material is in the nature of a web having adhesive areas to which transparencies stick; and the mask material is







employed as a conveyor belt for transporting the transparencies.

3,692,525

ULTRAVIOLET PROTECTION OF PHOTOGRAPHIC-MATERIALS

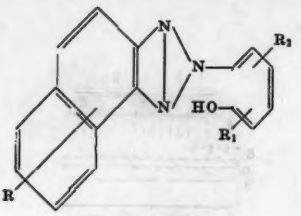
James J. Hartigan and Robert J. Clementi, Binghamton, N.Y., assignors to General Aniline & Film Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 676,731, Oct. 20, 1967. This application May 14, 1971, Ser. No. 143,619

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **8 Claims**

A finished photographic element, having a support and, thereon a plurality of developed and fixed photographic emulsion layers containing developed dye images at least one of said dye images being subject to fading by the action of ultraviolet radiation, the emulsion layer containing the developed dye images subject to fading lying between the support and a gelatin layer containing an ultraviolet absorbing hydrophobic compound represented by the following formula:



wherein R, R_1 and R_2 can be hydrogen or an alkyl group of 1 to 20 carbon atoms with at least one of the groups having at least 3 carbon atoms.

3,692,526

PHOTOSENSITIVE/PHOTOTHERMIC COMPOSITION AND PROCESS

Cynthia Geer Ulbing, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,434

Int. Cl. G03c *1/28, 5/24*

U.S. Cl. 96—108 **12 Claims**

A combination of a mercury halide with thiourea dioxide in photosensitive and thermosensitive elements and compositions provides reduced print-out. A latent image in these elements or compositions can be developed by heating the element or composition. The photosensitive and thermosensitive element can contain photosensitive silver halide and addenda commonly employed in photosensitive and thermosensitive materials, such as activator-toning agents, sensitizing dyes and reducing agents.

3,692,527

SILVER HALIDE EMULSION CONTAINING A MERCAPTO PYRIMIDINE DERIVATIVE ANTIFOGGANT

Anita von König and Hans-Joachim Kabbe, Leverkusen, Helmut Mäder, Odenthal-Hahnenberg, and Rigobert Otto and Helmut Reuss, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 4, 1970, Ser. No. 95,401

Claims priority, application Germany, Dec. 13, 1969, P 19 62 605.2

Int. Cl. G03c *1/34*

U.S. Cl. 96—109 **4 Claims**

The stability in storage and development of silver halide emulsion layers against deformation of uniform fog is improved by the addition of mercapto pyrimidine derivatives as antifoggants.

3,692,528

Patent Not Issued For This Number

3,692,529

PROCESS OF OILING

Loren J. Rychman, 406 Giles Place, Albert Lea, Minn. 56007

No Drawing. Continuation of abandoned application Ser. No. 615,891, Feb. 14, 1967. This application Sept. 8, 1970, Ser. No. 70,474

Int. Cl. C05 *9/02*; A23k *1/00*

U.S. Cl. 99—2 **5 Claims**

There is provided a process for mixing finely divided solids with larger granular carriers to obtain a homoge-

neous free-flowing product which may be subsequently blended with a granular solid such as fertilizers to produce a composite fertilizer material.

3,692,530
NEUTRALIZATION OF STRAW BY ADDING POTATO PEELINGS
Robert P. Graham, Western Regional Research Laboratory, El Cerrito, Calif. 94710
No Drawing. Filed Jan. 21, 1972, Ser. No. 219,834
Int. Cl. A23k *1/00, 1/23*
U.S. Cl. 99—10 8 Claims

Animal feed prepared from agricultural wastes. Example: Straw is treated with steam under superatmospheric pressure and the product mixed with sufficient alkaline potato peelings to provide an essentially neutral feed material.

3,692,531
METHOD OF PREPARING PROTEIN FORTIFIED VEGETABLE PRODUCT
Wilhelmus Heusdens, Kirkwood, and Balagtas F. Guevara, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.
No Drawing. Filed July 24, 1969, Ser. No. 844,663
Int. Cl. A23l *1/10, 1/12, 1/30*
U.S. Cl. 99—17 7 Claims

A process for producing nutritious protein fortified products by fortifying carbohydrate materials such as substantially gelatinized starch with a protein material which has not been heat gelled. The fortified carbohydrate material can be formed into a variety of food particles, such as pie shells, fortified fried potatoes, and snack chips, which exhibit an increased shelf life, improved organoleptic properties, and improved nutritional value. The fortified starch products can be formed into intermediate food products which reconstitute rapidly to form a cooked final product when subjected to heat.

3,692,532
MILK-FRUIT JUICE BEVERAGE AND PROCESS FOR PREPARING SAME
David R. Shenkenberg, 1111 Cameron Road, Alexandria, Va. 22308; Jiann C. Chang, 2414 Kensington St., Arlington, Va. 22207; and Locke F. Edmondson, 7110 Kempton Road, Lanham, Md. 20801
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,532
Int. Cl. A23l *1/04*
U.S. Cl. 99—28 9 Claims

Dry mixture of sweetener and sodium carboxymethylcellulose is mixed with a milk ingredient containing casein at a temperature below 90° F. The mixture is allowed to stand for at least 10 minutes causing the sodium carboxymethylcellulose to complex with the casein. Fruit juice is added to the complexed mixture after which the beverage is aged, pasteurized, and homogenized. Alternatively, the complexed mixture is pasteurized, homogenized, cooled, and then combined with fruit juice that has been pasteurized and cooled to form the beverage. The resulting beverage is a homogeneous, free-flowing, non-congealed liquid having a viscosity of less than 30 centipoises at 45° F. and stable at a pH below 5.

3,692,533
MODIFICATION OF THE PHYSICAL PROPERTIES OF FREEZE-DRIED RICE
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Clayton S. Huber, Houston, Tex.
No Drawing. Filed Aug. 28, 1970, Ser. No. 68,023
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 PS 8 Claims

A process for preparing dehydrated rice wherein the rice is cooked in water to a gelatinized state. The grain includes about seventy-five percent moisture content. Thereafter, the granular rice is subjected to freezing and then thawing for two or more cycles. Then, it is frozen and freeze dried to remove moisture. The dehydrated granular rice is quickly rehydrated by placing it in hot water.

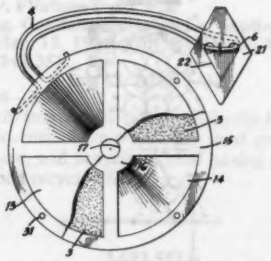
3,692,534
METHOD OF THE PRESERVATION OF FOOD AGAINST PUTREFACTION
Ryuzo Ueno, Nishinomiya-shi, Tetsuya Miyazaki, Itamishi, and Shigeo Inamine, Nishinomiya-shi, Japan, assignors to Ueno Pharmaceutical Co., Ltd., Osaka, Japan
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,528
Int. Cl. A21d *2/14;* A23l *3/34*
U.S. Cl. 99—90 P 4 Claims

A method of preserving food which must be cooked against putrefaction which comprises adding to the starting materials of a food product granules of a size of less than 500μ comprising powder of a pH lowering agent coated with a hardened oil having a melting point of 50 to 80° C., the pH lowering agent being selected from the group consisting of fumaric acid, monosodium fumarate, tartaric acid, malic acid and citric anhydride, and being contained in the granules in an amount of 25 to 40% by weight, together with a powder of an organic acid type food preservative selected from the group consisting of sorbic acid, potassium sorbate, calcium propionate and sodium propionate.

3,692,535
PROCESS FOR MAKING A READY-TO-BAKE PIE CRUST
Norrain E. Norsby, Hopkins, and Ernest W. Johnson, Minnetonka, Minn., assignors to General Mills, Inc.
No Drawing. Filed June 1, 1970, Ser. No. 42,521
Int. Cl. A21d *13/08*
U.S. Cl. 99—92 4 Claims

Ready-to-bake pie crust dough which is shelf stable and can be rolled out or otherwise handled without crumbling or breaking. The dough contains, in addition to shortening, flour and water, a fraction of developed wheat gluten.

3,692,536
FOOD PACKET
Mae Belle Esco Fant, 214 McSwain Drive, Greenville, S.C. 29607
Filed Aug. 19, 1969, Ser. No. 851,499
Int. Cl. B65b *29/04*
U.S. Cl. 99—77.1 6 Claims



A food packet comprising a porous encasement having a void or voids therewithin filled with food particles to be used in flavoring foods and beverages and further provided with a string and a tag for anchoring said packet to a cooking container.

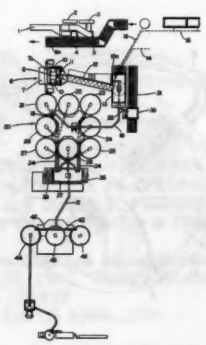
3,692,537
METHOD OF PRODUCING AN EXPANDED POTATO PRODUCT
Dirk R. D'Arnaud Gerkens, Breda, Netherlands, assignor to N.V. Preservenbedrijf, Breda, Netherlands
No Drawing. Continuation-in-part of application Ser. No. 633,700, Apr. 26, 1967. This application Aug. 10, 1970, Ser. No. 62,646
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 P 9 Claims

Producing an expanded fried potato product wherein raw potatoes are ground to form a liquid slurry, raw starch is added to this slurry, then this slurry is dried and gelatinized on a drum drier to obtain a potato powder, which is then ground to potato flour, low grade potato flour is added to adjust the reducing sugar content and reduce the swelling power, subsequently the resulting potato flour is mixed with water and salt and extruded into bands, which are cut into piecelets and then dried and fried in deep fat to produce a crispy expanded product.

3,692,538
METHOD OF PREPARING MEATY-FLAVORED PROTEIN HYDROLYZATES FROM MEAT CARCASS COMPONENTS
Valentin G. Moss, Monona, and Jack C. Trautman, Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.
No Drawing. Filed July 14, 1970, Ser. No. 54,860
Int. Cl. A22c *18/00;* A23k *1/10*
U.S. Cl. 99—107 23 Claims

Subdivided meat carcass components (e.g., bones and offal) are mixed with water and heat and/or enzyme hydrolyzed so as to solubilize a substantial portion of the protein content. A clear and essentially fat-free aqueous solution of protein-hydrolyzate is separated and treated with a relatively high concentration of acid (preferably hydrochloric acid) under refluxing conditions for a sufficient time to develop a meaty or brothy flavor while concurrently eliminating offalish and bitter flavor.

3,692,539
MANUFACTURE OF SAUSAGE PRODUCTS
Robert L. Dearth, Canton, Ohio, and Rodger M. Lindle, Dallas, Tex., assignors to Sugardale Foods, Inc., Canton, Ohio
Continuation-in-part of application Ser. No. 753,029, July 17, 1968. This application Jan. 19, 1971, Ser. No. 107,722
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 4 Claims



A procedure for handling ground meat components of various types in a meat packing plant production line for the manufacture of sausage products. Each type of primary or raw meat component used in formulating various wiener, bologna, or other sausage products, in chunks or trimmings as received from a slaughter house in boxes or barrels and in frozen or fresh refrigerated condition, is ground and converted separately and immediately to a semi-liquid or slurry. The slurry is handled and pumped as a liquid to and from separate storage tanks or silos, one for each type of meat component used. The meat component slurries then are pumped as semi-liquids to a mixing and formulating blender from which the formulated product is pumped to a silo serving the stuffing equipment for the particular sausage product to be made.

3,692,540
PREPARATION OF PASTA FILATA CHEESE
Robert R. Mauk, Northbrook, Ill., assignor to Kraftco Corporation, New York, N.Y.
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,189
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 6 Claims

Pasta filata cheese is prepared by a method involving forming pasta filata curd in whey, holding the curd in the whey until the acidity of the whey is from 0.25 to 0.30 percent, draining the whey from the curd, washing the curd, salting the curd, pressing the curd, dividing the pressed curd into pieces, heating the curd pieces to a temperature of 130 to 160° F. while at a pH of 5.0 to 5.4 in the absence of working while immersed in water to form a soft plastic curd mass and packaging the plastic curd mass to provide pasta filata cheese.

3,692,541
CANNED APPLE GEL AND METHOD OF PREPARING SAME
Vincent F. Altieri, Duxbury, and James E. Tillotson, Cohasset, Mass., assignors to Ocean Spray Cranberries, Inc., Hanson, Mass.
Filed July 6, 1970, Ser. No. 52,432
Int. Cl. A23l *1/04*
U.S. Cl. 99—132 4 Claims

A canned apple gel having a solids content of 30–60% and containing a non-gelling gum as a can release agent to permit the contents of the can to be easily removed as an unbroken unit.

3,692,542
SOFT CANDY CONTAINING CONFECTIONERY SYRUP
Raoul Guillaume Phillipe Walon, Brussels, Belgium, assignor to CPC International Inc.
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,637
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 R 6 Claims

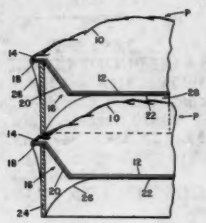
Soft candies which include fat, a flavoring agent, an emulsifier and a syrup, said syrup is characterized as having a D.E. less than 60, a levulose content of 3–16%, a dextrose content of 10–35%, a maltose content of 10–25%, and 40–60% of oligosaccharides having a degree of polymerization of 6 and higher, said percentages based on total carbohydrate solids present.

3,692,543
FOOD PRODUCTS
Louis A. Powell, Winter Haven, Fla., assignor to Wellman-Lord, Inc., Lakeland, Fla.
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,636
Int. Cl. A23l *1/24;* A23j *3/02*
U.S. Cl. 99—144 10 Claims

Solid, unconstituted free flowing granular food base products having a long storage life and being capable of constitution with water to yield emulsified mayonnaise-like

products and containing pregelatinized starch, an emulsifying combination of tricalcium phosphate, dipotassium phosphate and sodium phosphate, and either vegetable oil or synthetic vinegar or both. Additional, ingredients may be added to improve the flavor and texture of the products; including spices, flavorings and sweeteners.

3,692,544
PIE PACKAGE
Peter C. Dendrinos, Traverse City, Mich., assignor to Chef Pierre, Inc., Traverse City, Mich.
Filed Dec. 4, 1970, Ser. No. 95,014
Int. Cl. B65b *25/16*
U.S. Cl. 99—172 **8 Claims**



A packaging arrangement for frozen pies providing an extremely attractive package while incorporating a unique stacking feature for display purposes and to facilitate shipping and handling. A ring-like member is fixed under the lip of the formed aluminum pie pan and a shrinkable plastic film is fitted over the ring, the pan, and the product to seal the package. The ring diameter and the pie pan diameter are such that a plurality of sealed packages may be stacked for shipping and display purposes.

3,692,545
FROZEN COOKED WHOLE COLD NORTH ATLANTIC LOBSTER
Robert Moore, 240 Forest Ave., Salem, Mass. 02025
Filed Oct. 14, 1970, Ser. No. 80,734
Int. Cl. A23b *3/06*
U.S. Cl. 99—195 **7 Claims**

Cold North Atlantic lobsters are boiled for about 9 minutes in salted fresh water, removed, rinsed and cooled with about 45° F. fresh water, sleeved in warmed, flexible plastic film bags which are then vacuum sealed after a resting period during which heat from the lobster transfers to the bag. The vacuum packed lobsters are then cooled and frozen over a period of 2–12 hours to permit moderate sized ice crystals to form in the meat. During the process, the lobsters are kept upside-down, i.e. feet-up to preserve a desirable position for the lobster's blood and internal substances.

3,692,546
METHOD OF DRYING FRUITS
Amior Dolev, Chaim H. Mannheim, and Moshe Schimmel, Haifa, Israel, assignors to Centre for Industrial Research, The National Council for Research and Development, Haifa, Israel
No Drawing. Filed Mar. 13, 1970, Ser. No. 19,480
Claims priority, application Israel, Mar. 21, 1969, 31,873
Int. Cl. A23b *7/00*
U.S. Cl. 99—204 **14 Claims**

A method for the manufacture of dehydrated fruits, which comprises in combination the steps of fissuring the skin of the fruit by immersion in a dilute aqueous alkaline liquid, neutralizing the fruit with an edible acid, impregnating the fruit in vacuo with an aqueous sulfuring solution in an amount sufficient to preserve the fruit and forced-draft drying the fruit. The method is particularly applicable to fruit of the genus Prunus, but also to others such as grapes and pears.

3,692,547
Patent Not Issued For This Number

3,692,548
UNIVERSAL AQUEOUS INK CONTAINING 2-BUTYNE-1,4 DIOL
Marvin Packer, Broomall, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,466
Int. Cl. C09d *11/00*
U.S. Cl. 106—22 **12 Claims**

A single unique universal ink mixture containing polyethylene oxide polymer and other ingredients which can be used in place of the numerous different types of tailor made slow drying, quick drying and general purpose-medium drying inks that have heretofore been required to make different types of records. This multi-purpose ink is also useful in inscribing a clear continuous line on a marking surface e.g. a chart during adverse writing conditions such as when it is required to be transmitted through a long length of capillary tubing to a pen and when it is to be used in an abnormally humid or below freezing climate.

3,692,549
STOP LEAK COMPOSITION
Thomas E. Martin, 414 Brookside Terrace, Oklahoma City, Okla. 73137
No Drawing. Filed Feb. 25, 1971, Ser. No. 118,953
Int. Cl. C09k *3/10, 3/12*
U.S. Cl. 106—33 **3 Claims**

A composition for sealing small leaks in metal, including engine blocks and the like, consisting essentially of from about five to about six parts by volume of flax meal, to one part by volume of a mixture which contains three parts by volume of graphite to two parts by volume of aluminum powder.

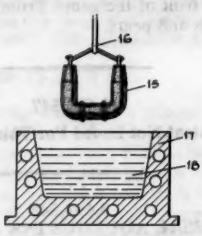
3,692,550
FACING AGENTS FOR MOLDING SAND
Ronald E. Melcher, Madison, and Robert W. Somers, Florham Park, N.J., assignors to Whitehead Brothers Company, Florham Park, N.J.
No Drawing. Continuation-in-part of application Ser. No. 18,715, Mar. 11, 1970. This application May 11, 1971, Ser. No. 142,351
Int. Cl. B28b *7/38*
U.S. Cl. 106—38.25 **14 Claims**

Acenaphthylene, when incoporated into foundry molding sand, prevents burn-on of the sand granules to the casting surface, and provides a sand having good collapsibility and good recycle life.

3,692,551
CORE FOR USE IN PRESSURE MOLDING
William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Feb. 24, 1970, Ser. No. 13,703
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.3 **3 Claims**

This application discloses core structures that exhibit strength and a hard, ceramic-like surface finish; methods

of producing the same which involve mixing particles of core materials, and/or coating core shapes, with molten



salts or mixtures thereof; and methods of injection molding plastic articles around such cores.

3,692,552

LIQUID LAUNDRY STARCH

Hans Rüggeberg, Hilden, Rhineland, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed July 15, 1970, Ser. No. 55,273
Claims priority, application Germany, Aug. 9, 1969, P 19 40 655.4
Int. Cl. C08b *25/00*
U.S. Cl. 106—208 6 Claims

A liquid laundry starch comprising an aqueous suspension of starch or starch derivatives in an aqueous solution of xanthan gum and/or water-soluble derivatives of xanthan gum.

3,692,553

CARBON BLACK CONTAINING ORGANOMETAL COMPOUNDS OF THE ALLYLIC OR BENZYLIC TYPE

Richard L. Smith and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 7, 1971, Ser. No. 141,430
Int. Cl. C08h *17/08;* C09c *1/48, 1/56*
U.S. Cl. 106—307 8 Claims

Organometal compounds of the allylic or benzylic type are combined with carbon blacks containing at least 0.2 percent oxygen. As a result, the hydrophilic properties of the carbon blacks are increased, and the cure rates of vulcanizable rubber compositions are retarded when the blacks are compounded with these.

3,692,554

PRODUCTION OF PROTECTIVE LAYERS ON COBALT-BASED ALLOYS

Karl Bungardt, Gunter Lehnert, and Helmut Meinhardt, Krefeld, Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

Filed Dec. 3, 1970, Ser. No. 94,752
Claims priority, application Germany, Dec. 5, 1969, P 19 61 047.0
Int. Cl. C23c *9/00*
U.S. Cl. 117—22 4 Claims

Cobalt-based alloys have their surface treated to provide high-temperature corrosion resistance, by diffusing nickel, a metal of the Platinum Group, and aluminum into the surface of the alloy. The metals may be heat-diffused simultaneously or in succession.

3,692,555

PHOTOGRAPHIC FILM SUPPORT HAVING AN ANTIHALATION LAYER

Masazumi Aono and Ikuo Fuutagawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,229
Claims priority, application Japan, Apr. 7, 1970, 45/29,504
Int. Cl. G03c *1/84*
U.S. Cl. 117—33.3 14 Claims

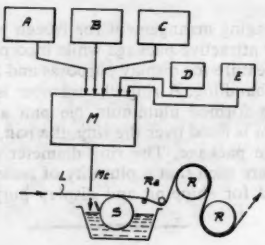
A photographic film support comprising a film support having formed thereon an antihalation layer containing at least one member selected from the group consisting of a hydroxyalkylalkyl cellulose hexahydrophthalate and a hydroxyalkylalkyl cellulose tetrahydrophthalate, wherein said alkyl group has a carbon range of from 1 to 4 carbon atoms and includes two or more alkyl groups.

3,692,556

PROCESS FOR PRODUCING PRESSURE-SENSITIVE TRANSFER SHEETS

Giorgi Cecconi, Via de Amicis-Palazzo Bianchi, 20090 Segrate, Italy

Filed May 24, 1968, Ser. No. 731,830
Claims priority, application Italy, Mar. 1, 1968, 804,044/68
Int. Cl. B41c *1/06;* B44d *1/46*
U.S. Cl. 117—36.1 11 Claims



A process for producing a pressure-sensitive transfer sheet having an essentially coherent but particulate transfer color-yielding layer adherent to one face of a sheet support, comprising the steps of providing a fine colloidal suspension in water of pigments and fillers, of providing a colloidal solution in water of a film-forming macromolecular substance capable of irreversibly precipitating upon dehydration of the solution, of mixing said suspension and solution, of forming a layer of the resulting mixture on said face, of causing progressive elimination of the water from said layer to promote formation on said face of an essentially dry film wherein said pigments and fillers are embedded into a precipitated macromolecular pellicular structure.

3,692,557

PROCESS FOR PRODUCING AN ANTIQUE FINISH

Luigi Oscar Sormani, Omaha, Nebr., assignor to Raymond J. Walowski, Omaha, Nebr.

Continuation of abandoned application Ser. No. 808,092, Mar. 18, 1969. This application Nov. 23, 1970, Ser. No. 92,266
Int. Cl. B44d *1/14;* C09d *5/28*
U.S. Cl. 117—41 6 Claims

Decorative "antique" finishes are produced by the three step process of this invention whereby a first composition comprising an acrylic emulsion polymer, ground marble and a liquid polyurethane composition are applied to an appropriate surface; upon drying, a second composition comprising a water soluble coloring material is applied;

and finally the first composition is again applied. The first step can be eliminated if the surface to be finished is of a

non-absorbent substance, for example, metal, glass, or finished furniture.

3,692,558

ARTICLE COATED WITH FLUOROCARBON POLYMER PRIMER AND FLUOROCARBON POLYMER TOPCOAT

Ervin R. Werner, Jr., Levittown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 45,944, June 12, 1970, which is a division of application Ser. No. 778,828, Oct. 25, 1968. This application Dec. 22, 1970, Ser. No. 100,765

Int. Cl. B32b *15/08;* B44d *1/36*

U.S. Cl. 117—72 12 Claims

Articles primed with compositions containing 10–75% lithium polysilicate, 25–90% of a fluorocarbon polymer and a liquid carrier to improve adhesive of a fluoropolymer topcoat.

3,692,559

PROCESS FOR PREPARING POLYESTER BLEND FABRICS WITH DURABLE FLAME RESISTANCE

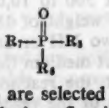
Stancil Driftwood Powell, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 12, 1970, Ser. No. 88,995

Int. Cl. B44d *1/14;* C09k *3/28*

U.S. Cl. 117—76 T 5 Claims

There is provided a process for imparting flame retardency to a fabric comprised of at least 30 percent of polyester fiber, at least 5 percent of cellulose acetate fiber, and at least 15 percent of a cellulosic fiber. In said process of the fabric is passed through a bath comprised of a flame retardant amount of tetrakishydroxymethylphosphonium chloride. Thereafter the fabric is cured at a temperature of from about 225 to about 400 degrees Fahrenheit for from about 15 seconds to about 10 minutes. To impart flame retardancy to the polyester portion of said fabric the fabric is passed through a solution or emulsion comprised of a flame retardant amount of a compound of the formula



wherein R_5, R_6, and R_7 are selected from the group consisting of hydroxy, chlorine, fluorine, bromine, iodine, haloalkyl of 1 to about 18 carbon atoms, and halohydroxyalkyl of 1 to about 18 carbon atoms, provided that at least one of R_5, R_6, and R_7 is haloalkyl or halohydroxyalkyl. The use of cellulose acetate as one of the components of the aforementioned fabric allows one to obtain more durable flame retardance and better fabric aesthetics with reduced quantities of flame retardant.

3,692,560

ACID HARDENING RESINS WHICH CAN BE ACTIVATED BY ULTRAVIOLET LIGHT

Hans-Jürgen Rosenkranz, Krefeld, and Hans Rudolph and Hans-Joachim Kreuder, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,541

Claims priority, application Germany, Sept. 18, 1969, P 19 47 194.4

Int. Cl. C09d *3/52, 3/54, 3/58*

U.S. Cl. 117—93.31 6 Claims

The invention relates to acid-hardening resin compositions having incorporated therein a benzophenone compound each of the two benzene nuclei of which being substituted by a halogenated methyl group. If said compositions are irradiated by UV-light said benzophenone compound splits off hydrogen halide which, in turn, catalyses the hardening of the resin composition.

3,692,561

METHOD OF TREATING PENTACHLOROPHENOL

Frederick M. Hager, Elmira, Waterloo, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Quebec, Canada

No Drawing. Filed June 29, 1970, Ser. No. 50,891

Int. Cl. B44d *1/02;* C09k *3/22*

U.S. Cl. 117—100 A 20 Claims

Method of treating pentachlorophenol flakes, pellets or prills with an oil and a glycol to prevent formation of dust during storage.

3,692,562

COATED TABLETS HAVING PLASTIC PARTICLES DISPERSED IN THE COATING

Ryuichi Kawata, 16–12 Sendagi, Sendagi 3-chome, Bunkyo-ku, Tokyo, Japan; Hiroitsu Kawada, 30–29–22 Hasune 2-chome, Itabashi-ku, Tokyo, Japan; Tadayoshi Ohmura, 2681–101 Katayamanaka-dori, Niiza-machi, Kitaadachi-gun, Saitama, Japan; Sumio Uematsu, 440 oaza-Tazima, Urawi-shi, Saitama, Japan; and Takeshi Kohinata, 16–1 Hasune 3-chome, Itabashi-ku, Tokyo, Japan

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,429

Claims priority, application Japan, Dec. 2, 1969, 44/96,243

Int. Cl. A61k *17/00;* B44d *5/00*

U.S. Cl. 117—100 A 10 Claims

Tablets are coated with a coating composition comprising a coating material and fine particles of a solid plastic.

3,692,563

Patent Not Issued For This Number

3,692,564

WAX COATING PROCESS FOR CORRUGATED PAPERBOARD

Stewart J. Gonta, Marina Del Rey, and Thomas Hallis, Jr., Brea, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 678,540, Oct. 27, 1967. This application Oct. 14, 1970, Ser. No. 80,769

Int. Cl. B05c *11/10*

U.S. Cl. 117—102 R 4 Claims

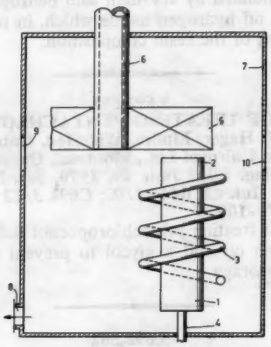
Wax coated corrugated paperboard of improved water resistance and fiber tear properties is produced by dipping

partially hydrated corrugated paperboard into molten wax at a temperature between the melting point of the wax and the boiling point of water, and then draining the dipped paperboard at a temperature between the melting point of the wax and the boiling point of water. The time and temperature of the dipping and draining steps are controlled and correlated with the initial water content of the paperboard and the viscosity of the molten wax so as to achieve maximum surface coating with minimum wax penetration into the interior of the paperboard elements.

3,692,565
METHOD OF DEPOSITING SUBSTANCES FROM THE GAS PHASE

Bernd Lersmacher, 31 An den Weihern, 5105 Laurensburg, Aachen, Germany; Hans Jurgen Lydtin, 9 Am Goepelschacth, 519 Stolberg, Germany; and Rolf Josef Wilden, 62 Brandstrasse, 5101 Roetgen, Germany

Filed Oct. 22, 1970, Ser. No. 83,017
Int. Cl. C23c *11/00, 13/00, 17/02*
U.S. Cl. 117—106 R **2 Claims**



The invention relates to a method of depositing substances on a heated substrate by decomposition of gases. A highly satisfactory and fast deposition is obtained in that the thickness of the gas film at the surface of the substrate is maintained small by mechanical means.

3,692,566
METHOD OF DEPOSITING ISOTROPIC BORON NITRIDE

Louis E. Branovich, Neptune, William B. P. Fitzpatrick, Wall, and Martin L. Long, Jr., West Belmar, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,519
Int. Cl. C23c *11/08*
U.S. Cl. 117—106 R **1 Claim**

Chemical vapor deposited isotropic boron nitride is formed on the inner walls of a reaction chamber by forming a vapor mixture of an oxygen containing organic boron compound with ammonia and reacting the vapor mixture in said reaction chamber at about 1100 degrees C. to about 1900 degrees C. at pressures of about one torr to atmospheric.

3,692,567
METHOD FOR CONTROLLING NOXIOUS VAPORS

Calvin Vogel, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed June 1, 1971, Ser. No. 148,952
Int. Cl. B44d *1/44*; C09k *3/28*
U.S. Cl. 117—62 **7 Claims**

Method for substantially removing noxious vapors liberated from materials treated with highly halogenated flame retarding agents upon exposure to heat is provided comprising applying to said materials an organophosphorus compound having the structural formula:

$$(R')_m-\overset{\overset{O}{\|}}{P}-(OR)_n$$

wherein R is a member selected from the group consisting of alkynyl, alkenyl and aralkenyl radicals, R' is a member selected from the group consisting of alkyl, haloalkyl and alkenyl radicals, m is a whole number from 0 to 1 inclusive, and n is a whole number from 2 to 3 inclusive, such that $m+n$ equals 3.

3,692,568
WAX COATED POLYMERIC ARTICLES

Richard C. Clark, Orange, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed July 13, 1970, Ser. No. 54,586
Int. Cl. B44d *1/22*
U.S. Cl. 117—138.8 UA **4 Claims**

An article comprising a polymer substrate made up principally of an acrylic polymer or copolymer is coated with a highly adhesive wax blend comprising paraffin wax and a minor proportion of a compatibility agent consisting essentially of a copolymer of an olefin monomer and an acrylic monomer.

3,692,569
SURFACE-ACTIVATED FLUOROCARBON OBJECTS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 779,265, Nov. 26, 1968, which is a continuation-in-part of application Ser. No. 595,332, Nov. 18, 1966. This application Feb. 12, 1970, Ser. No. 10,997
Int. Cl. B44d *1/09*; B32b *27/06*
U.S. Cl. 117—138.8 UF **8 Claims**

The surface activity of a fluorocarbon polymer having the surface character ranging from no surface activity to some surface activity is increased by coating the polymer with a copolymer of a fluorinated ethylene and a sulfonyl-containing fluorinated vinyl monomer. The fluorocarbon polymer is thereby rendered water-wettable, printable, and cementable. Porous sheeting of the so-coated fluorocarbon polymer is useful as an electrochemical cell matrix and non-porous, ion conductive sheeting thereof can be used as a fuel cell membrane.

3,692,570
MICROPOROUS SHEET STRUCTURES AND A PROCESS FOR THE PREPARATION THEREOF

Harro Träubel, Leverkusen-Kueppersteg, and Klaus König, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 29, 1968, Ser. No. 780,263
Claims priority, application Germany, Dec. 7, 1967, F 54,240
Int. Cl. B29d *27/00*; C09d *3/48*; D06n *3/04*
U.S. Cl. 117—161 **7 Claims**

Microporous sheet structures are prepared by reacting a compound having at least two terminal NCO groups and a molecular weight of between 100 and 10,000, a compound having at least two OH or NH groups and a molecular weight of 500 to 10,000 and/or a compound having a molecular weight of 18 to 500 which contains at least two OH, two NH or at least one OH and one NH group in an inert medium that dissolves the reactants but not the product, the reaction being conducted stepwise by adding one of the reactants to the others in at least two increments such that the reaction is substantially complete after each addition, applying the reaction mixture to a substrate and removing the inert medium.

3,692,571

METHOD OF REDUCING THE MOBILE ION CONTAMINATION IN THERMALLY GROWN SILICON DIOXIDE

Douglas Roy Colton, Kanata, Ontario, and Yiu Chung Cheng and Rudolph John Kriegler, Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,097
Int. Cl. H01l 7/00; C23c 11/08
U.S. Cl. 117—201 8 Claims

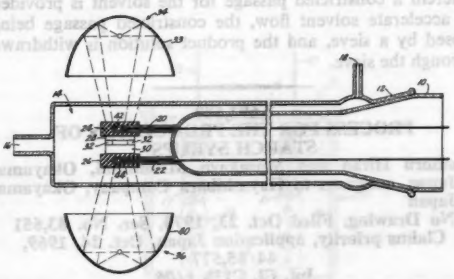
A typical process for thermally oxidizing a silicon semiconductor material is disclosed with an improvement consisting of the addition of a halogen substance, such as HCl, to the oxidizing atmosphere. This additional step in the oxidation process has the effect of obviating unstable electrical characteristics, caused by mobile ion contamination in thermally grown silicon dioxide. This process is particularly applicable in the manufacture of discrete and integrated MOSFET devices.

3,692,572

EPITAXIAL FILM PROCESS AND PRODUCTS THEREOF

Wolfgang Strehlow, 3M Center, St. Paul, Minn. 55101

Int. Cl. B44c 1/02, 1/18; H01s 3/08
U.S. Cl. 117—201 17 Claims



A process for producing epitaxial films comprising reacting a crystalline source material with a gaseous reagent at a first temperature to form vapor phase reaction products and exposing a substrate to the reaction products at a second lower temperature to grow an epitaxial film on the substrate. And, the process further comprising reflective coating at least one film surface and one other surface of either the film, substrate, or an attached support to form a resonant cavity. Products according to the process described.

3,692,573

ELECTROCONDUCTIVE AND HEAT BARRIER COATINGS FOR CERAMIC BODIES

Alexander G. Gurwood, 298 NW. 105th St., Miami Shores, Fla. 33153

No Drawing. Continuation-in-part of application Ser. No. 858,871, Sept. 17, 1969. This application Apr. 5, 1971, Ser. No. 131,407
Int. Cl. H01b 1/06; H05b 33/28
U.S. Cl. 117—211 19 Claims

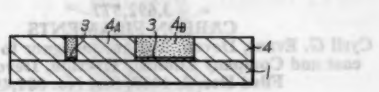
This invention is directed to a uniformly electroconductive and heat barrier, stable, transparent coating for large sized pieces of glass or other ceramic bodies, said coating being produced by a composition comprising a monosaccharide hexose sugar, a tin halide, a halide hydracid and a monohydric alcohol having 1 to 3 carbon atoms.

3,692,574

METHOD OF FORMING SEEDING SITES ON A SEMICONDUCTOR SUBSTRATE

Isamu Kobayashi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 5, 1968, Ser. No. 781,542
Claims priority, application Japan, Dec. 12, 1967, 42/79,961
Int. Cl. B44d 1/18
U.S. Cl. 117—212 10 Claims



Method for locating seeding sites on a semiconductor substrate for the subsequent growth of polycrystalline areas thereon which involves forming a masking layer over the substrate, depositing a semiconductor material in selected areas of the mask in which the seeding sites are to be developed, covering the resulting assembly with another masking layer, selectively removing portions of the second masking layer and thereafter selectively removing the remaining portions of the first masking layer, leaving seeding sites composed of a semiconductor material in the preselected locations.

3,692,575

METHOD FOR THE PRODUCTION OF DISPENSER CATHODE FOR ELECTRONIC DISCHARGE VESSELS

Wolfgang Nestler, Munich, Germany, assignor to Siemens Aktiengesellschaft

No Drawing. Continuation of application Ser. No. 606,003, Dec. 30, 1966. This application Oct. 23, 1970, Ser. No. 83,673
Claims priority, application Germany, Jan. 19, 1966, S 101,520
Int. Cl. B44d 1/02; H01j 9/00
U.S. Cl. 117—213 2 Claims

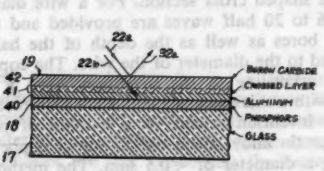
A method of providing a layer of metal of the platinum group, i.e., osmium, iridium, on the cathode of a dispenser cathode structure, by the separation through chemical extraction out of an appropriate soluble compound of the metal, for example, oxide hydrate or chloride, with reduction, possibly in an H_2 atmosphere, and sintering.

3,692,576

ELECTRON SCATTERING PREVENTION FILM AND METHOD OF MANUFACTURING THE SAME

Kenjiro Takayanagi, Kamakura, Kihachiro Matsuyama, Tokyo, Tadashi Fujiwara, Kawasaki, Hideaki Mizuno, Tokyo, and Naoki Akiyama, Naka-gun, Japan, assignors to Victor Company of Japan, Limited, Moriya-cho, Kanagawa-ku, Yokohama, Japan

Filed Jan. 9, 1970, Ser. No. 1,647
Claims priority, application Japan, Jan. 12, 1969, 44/2,238
Int. Cl. H01j 29/28
U.S. Cl. 117—217 7 Claims



A film for the prevention of scattering of electrons comprising an electrode layer, a crossed layer formed

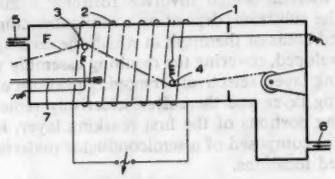
thereon consisting of an electrode constituent material and a material for the prevention of scattering of electrons smaller in atomic number than that of the electrode constituent material, and a scattering preventing layer and on which is formed a layer for the prevention of scattering of electrons of the second material on said crossed layer. A method of manufacturing the above electron scattering prevention film is also disclosed.

3,692,577

CARBON FILAMENTS

Cyril G. Evans, Devon, England, assignor to John Heathcoat and Company Limited, Tiverton, Devon, England

Filed Dec. 2, 1969, Ser. No. 881,490
Int. Cl. C23c *13/04*
U.S. Cl. 117—225 **19 Claims**



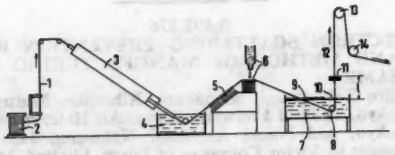
Carbon filaments are formed by graphitizing a carbon containing filament in an atmosphere of inert gas and vapors of Groups I, II, IV and VI metals.

3,692,578

METHOD OF PRODUCING TIN LAYERS OR TIN ALLOY LAYERS ON COPPER OR COPPER ALLOY WIRES BY HOT TIN PLATING

Horst Schreiner and Henryk Fidos, Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany

Filed Nov. 10, 1970, Ser. No. 88,400
Claims priority, application Germany, Nov. 13, 1969, P 19 57 031.1
Int. Cl. C23c *1/04*
U.S. Cl. 117—227 **7 Claims**



The invention relates to a method and a device for tin plating copper jump wires. The copper wire passes through a tin bath and is guided through a stripper nozzle, situated a distance from the bath surface. The stripper nozzle is heated. The bore of the stripper nozzle possesses a wave shaped cross section. For a wire diameter of 0.5 mm., 6 to 20 half waves are provided and the diameter of the bores as well as the depth of the half waves are adjusted to the diameter of the wire. The copper wires tin plated according to the invention, have a uniform tin layer with a thickness $>3\ \mu$ and are extremely solderable.

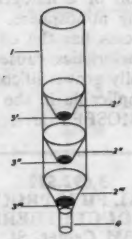
Our invention relates to a method of producing tin layer or tin alloy layers on copper or copper alloy wires having a diameter of <0.5 mm. The method is effected by hot tin plating at a uniform thickness of $>3\ \mu$ across the wire circumference. The wire is then passed through a tin bath or a tin alloy bath and is guided through a profiled stripper nozzle.

3,692,579

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF SOLUTIONS

Karl Lauer, Strahlenburg, Schriesheim, Germany, and Peter Stephan, Romerstrasse 52, Worms am Rhine, Germany

Filed Jan. 15, 1970, Ser. No. 3,166
Claims priority, application Germany, Jan. 22, 1969, P 19 03 027.4
Int. Cl. B01f *1/00*
U.S. Cl. 127—22 **20 Claims**



Solutions of readily soluble material, e.g. sugar, having any desired solute concentration are produced continuously on a large scale by introducing measured amounts of a solid solute into a downwardly moving current of solvent wherein a constricted passage for the solvent is provided to accelerate solvent flow, the constricted passage being closed by a sieve, and the product solution is withdrawn through the sieve.

3,692,580

PROCESS FOR THE PRODUCTION OF STARCH SYRUPS

Mamoru Hirao and Masakazu Mitsuhashi, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,651
Claims priority, application Japan, Oct. 24, 1969, 44/85,577
Int. Cl. C13k *1/06*
U.S. Cl. 127—29 **8 Claims**

A starch syrup having a low D.E., a low viscosity and good chemical stability is prepared by adding to a first starch syrup prepared by an acid or an enzyme (such as alpha-amylase) hydrolysis of starch, a second starch syrup prepared from a starch hydrolysis involving the action of alpha-1,6-glucosidase. The second syrup may be hydrogenated or the syrup mixture may be hydrogenated.

3,692,581

ACID MODIFICATION OF FLOUR AND STARCH WITH HCl AND HF

Peter J. Ferrara, Ridge Road, Cornwall, N.Y. 12518

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,181
Int. Cl. C13l *1/08*
U.S. Cl. 127—38 **7 Claims**

Improved acid modification of starches and flours by treating such in the conventional manner with a mixture of hydrogen fluoride and at least one other mineral acid.

3,692,582

PROCEDURE FOR THE SEPARATION OF FRUCTOSE FROM THE GLUCOSE OF INVERT SUGAR

Asko J. Melaja, Kantvik, Finland, assignor to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed July 31, 1970, Ser. No. 59,987
Int. Cl. C13k *3/00, 9/00*
U.S. Cl. 127—46 A **8 Claims**

Process for separating fructose from an aqueous invert sugar solution involving supplying the invert sugar solu-

tion to a 2.5–5 meter column of an alkaline earth metal salt of a polystyrene sulfonate-divinylbenzene cation exchange resin. Three fractions are collected: a glucose-rich fraction, a fraction containing glucose and fructose and a fructose-rich fraction.

3,692,583

DESMUTTING ETCHED ALUMINUM ALLOYS

Paul R. Mucenieks, Trenton, and Dirk J. Muyskens, Princeton Junction, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,885
Int. Cl. C23g 1/22
U.S. Cl. 134—3 4 Claims

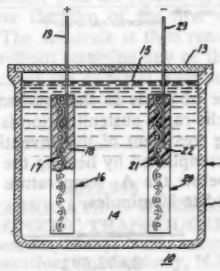
Aluminum alloys which are covered with an insoluble smut due to alkali or other treatment are cleaned and brightened by aqueous compositions containing mineral acids and peroxydiphosphate ions.

3,692,584

SEALED ELECTROCHEMICAL CELL WITH AN ELECTROLYTIC SOLUTION CONTAINING AN ELECTROLYTE AND A DISSOLVED FUEL

Randall N. King, Johnstown, N.Y., assignor to General Electric Company

Filed Oct. 27, 1969, Ser. No. 869,567
Int. Cl. H01m 11/00
U.S. Cl. 136—83 R 4 Claims



A sealed electrochemical cell has a casing, an electrolytic solution containing an electrolyte and a dissolved fuel in the casing, a metallic oxide positive electrode positioned in the electrolytic solution, and a negative electrode positioned in the solution and spaced apart from the positive electrode. An electrode is described which comprises an electrically conductive screen, and a coating of a noble metal and polyethylene graphite thereon. A method of making such an electrode is also described.

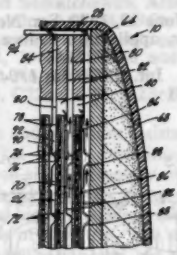
3,692,585

FUEL CELL BATTERY

Alfred M. Mayo, 30828 Marne Drive, Palos Verdes Peninsula, Calif. 90274

Filed May 21, 1969, Ser. No. 826,419
Int. Cl. H01m 27/02, 27/04
U.S. Cl. 136—86 R 8 Claims

Battery is made very light, compact, and efficient by making fuel cell units very thin and generally flat and rectangular. Cell units are stacked in facewise relation to make box like structure and electrically connected in series for working voltage. Each unit comprises fuel and oxidant electrode layers spaced by permeable insulating layer to provide electrolyte passage. Impervious, conductive barrier layer between each pair of adjacent cell units and in contact with both. In one form barrier layer has protuberances on each side contacting units to provide fuel and oxidant gas passages. Insulating layer has wettable surface and maintains electrolyte in contact with electrodes for high efficiency. It is about .010 inch or less thick to produce minimum ion path. Electrode layers



are about .005 inch thick or less. All elements are held in tight facewise contact for compactness and also to cause all elements to provide structural support for each other.

3,692,586

METHOD OF BATTERY PLATE MANUFACTURE UTILIZING ULTRASONIC VIBRATIONS

Roland H. Williams, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

No Drawing. Filed May 18, 1970, Ser. No. 38,566
Int. Cl. H01m 35/26
U.S. Cl. 136—67 1 Claim

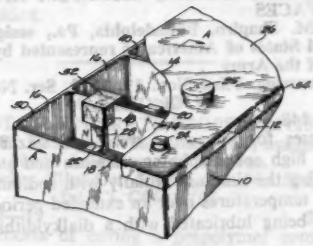
The method of impregnating sintered battery plates or plaques with a salt bath solution which, when subjected to electrical current, forms an active metal on the battery plate utilizing ultrasonic vibrations to create a cavitation-implosion cycle within the pores of the sintered plate which augments penetration and retention of the salt bath solution within the plate.

3,692,587

MULTICELL STORAGE BATTERY

Earl Leon Vetor, Germantown, and Helmuth Faust, Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 13, 1970, Ser. No. 63,467
Int. Cl. H01m 5/00
U.S. Cl. 136—134 R 8 Claims



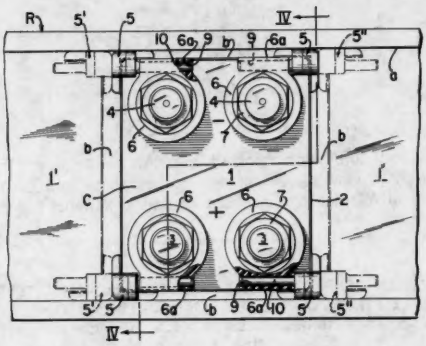
A multicell storage battery having a thermoplastic cover and container and utilizing up-and-over intercell connector construction is provided with a thermoplastic material, preferably an ethylene vinyl acetate compound, which encapsulates the link connecting the battery elements in adjoining cell compartment through a notch in the cell partitions so that the cover is capable of being heat sealed onto the container to obtain welded, fluid-tight joints between the cover and container.

3,692,588

ARRANGEMENT FOR ASSEMBLING STORAGE CELLS IN BATTERIES

Pierre Chamodon, Bordeaux, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme) Pont de la Folie, Romainville, Seine-Saint-Denis, France

Filed June 19, 1970, Ser. No. 47,670
Claims priority, application France, June 27, 1969, 6921648
Int. Cl. H01m 1/04
U.S. Cl. 136—171 20 Claims



An arrangement for assembling storage cells in batteries, so as to maintain them spaced apart side by side and insulated from each other in a supporting rack, including corner members of insulating material mounted on the cell terminal posts over the cell covers which embrace side faces at the cell corners and abut side parts of the rack and adjacent corner members of adjacent cells to space the cells apart for air circulation as well as to insulate them from each other. The bottom of each cell is also insulated and spaced from a bottom part of the rack by an insulating member centered with respect to the cell casing bottoms and means associated with it to prevent longitudinal and lateral translation of the cells relative to each other and base parts of the rack.

3,692,589

METHODS FOR REDUCING WEAR AND SEIZURE BETWEEN RUBBING TITANIUM AND STEEL SURFACES

Arthur M. Shapiro, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,155
Int. Cl. C23f 1/00
U.S. Cl. 148—6 6 Claims

Processes for improving wear and seizure resistance between high speed rubbing titanium and steel surfaces by reacting the titanium initially with sodium fluoride at elevated temperatures over an extended period, the metal surfaces being lubricated with a dialkyldithiophosphate.

3,692,590

FLUX FOR SUBMERGED ARC WELDING

Tomokazu Godai and Osamu Tanaka, Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Sept. 2, 1970, Ser. No. 68,966
Claims priority, application Japan, Sept. 3, 1969, 44/69,843
Int. Cl. B23k 35/24
U.S. Cl. 148—23 11 Claims

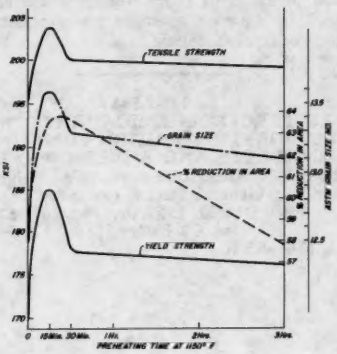
A flux for submerged arc welding comprising 5–17% potash glass, 5–18% magnesia, 5–15% calcium carbonate, 10–20% alumina, 20–33% rutile, and 5–18% of at least one fluoride compound, optionally with less than 7% manganese dioxide added thereto.

3,692,591

METHOD FOR EFFECTING THE RAPID HEAT-TREATMENT OF STEEL PLATE

Donald S. Dabkowski, Penn Hills Township, Allegheny County, and Lew F. Porter, Monroeville, Pa., assignors to United States Steel Corporation

Filed Aug. 31, 1970, Ser. No. 68,205
Int. Cl. C21d 1/18
U.S. Cl. 148—144 3 Claims



The response of steels to the production of ultra-fine grains by a cyclic-rapid austenitization is enhanced by the preconditioning treatment of this invention. This preconditioning is accomplished by heating the article to a temperature just below the A_1 temperature of the steel, for a time of about 5 to 30 minutes.

3,692,592

METHOD AND APPARATUS FOR DEPOSITING EPITAXIAL SEMICONDUCTIVE LAYERS FROM THE LIQUID PHASE

Donald Paul Marinelli, Trenton, N.J., assignor to RCA Corporation

Filed Feb. 12, 1970, Ser. No. 10,883
Int. Cl. H01l 7/38
U.S. Cl. 148—172 10 Claims

One or more epitaxial layers of a semiconductive material are deposited on a substrate in a furnace boat containing for each layer to be deposited a reservoir well adjacent to but vertically above a growing well. A charge of the ingredients of each of the epitaxial layers is placed in a separate one of the reservoir wells and the boat is heated to melt the charges. The melted charges are successively poured from their respective reservoir wells into their adjacent growing wells and the substrate is placed into the respective growing wells to permit an epitaxial layer to deposit on the substrate.

3,692,593

METHOD OF FORMING SEMICONDUCTOR DEVICE WITH SMOOTH FLAT SURFACE

Frank Zygmunt Hawrylo, Trenton, and Henry Kressel, Elizabeth, N.J., assignors to RCA Corporation

Filed June 18, 1971, Ser. No. 154,553
Int. Cl. H01l 7/38
U.S. Cl. 148—172 9 Claims

An epitaxial layer of single crystalline gallium arsenide or aluminum gallium arsenide having a low concentration

of aluminum is deposited on a body of single crystalline semiconductor material by liquid phase epitaxy. An additional layer of single crystalline aluminum gallium arsenide having a relatively high concentration of aluminum is deposited by liquid phase epitaxy on the epitaxial layer. The additional layer is then completely etched away by an etchant which does not attack the material of the epitaxial layer, such as boiling hydrochloric acid, to expose the entire surface of the epitaxial layer and provide the epitaxial layer with a smooth, flat surface.

3,692,594

METHOD OF FORMING AN EPITAXIAL SEMICONDUCTIVE LAYER WITH A SMOOTH SURFACE

Vincent Michael Cannuli, Trenton, N.J., assignor to RCA Corporation

Filed June 21, 1971, Ser. No. 154,824
Int. Cl. H01l 7/38
U.S. Cl. 148—172 9 Claims

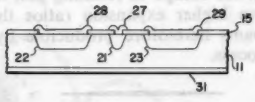
An epitaxial semiconductive layer having a smooth surface is formed on a substrate by first depositing the epitaxial layer on the substrate from a first solution of the semiconductive material dissolved in a molten metal solvent and then bringing the epitaxial layer having a film of the first solution thereon into contact with a second solution of a molten metal solvent saturated with a semiconductive material and containing a metal which increases the surface cohesion of the solution. The epitaxial layer is held in contact with the second solution only long enough to dissolve the film of the first solution in the second solution. The substrate is then removed from the second solution without retaining any of the second solution on the surface of the epitaxial layer so as to provide the epitaxial layer with a smooth surface.

3,692,595

METHOD OF FABRICATING A SEMICONDUCTOR MAGNETIC TRANSDUCER

Edward C. Hudson, Jr., Derry, N.H., assignor to Hudson Corporation, Londonderry, N.H.

Filed May 28, 1969, Ser. No. 828,665
Int. Cl. H01l 7/44
U.S. Cl. 148—187 6 Claims



The semiconductor magnetic transducer disclosed herein is fabricated by first doping a semiconductor wafer so that the concentration of the doping impurity diminishes as a function of distance from one surface of the wafer. An emitter region and a pair of collector regions are then diffused into the one surface of the wafer with the collector regions being equally spaced from the emitter region and on either side thereof. When the base-emitter junction is forward biased, charge carriers flowing from the emitter region are concentrated at the portion of the region furthest from the diffusion surface and are proportioned between the collector regions as a sensitive function of magnetic flux generally parallel to the one surface and in a plane separating the collectors.

3,692,596

DISPERSION STRENGTHENED NICKEL-CHROMIUM ALLOYS

Robert William Fraser, P.O. Box 1031, Fort Saskatchewan, Alberta, Canada; Bud William Kushnir, 14827 75th St., Edmonton, Alberta, Canada; and Bauke Weizenbach, R.R. 2, Fort Saskatchewan, Alberta, Canada

No Drawing. Application Apr. 14, 1969, Ser. No. 815,780, which is a continuation-in-part of application Ser. No. 570,389, July 22, 1966. Divided and this application Mar. 2, 1971, Ser. No. 120,326
Int. Cl. C22c 19/00; C23c 9/00
U.S. Cl. 148—31.5 3 Claims

High temperature and oxidation resistant alloy products consisting of a nickel matrix containing uniformly disseminated sub-micron sized refractory oxide particles and having deposited thereon up to about 35%, by weight chromium with the highest concentration of chromium being at the surface of the strip. The matrix is substantially free of recrystallization and has elongated, fibrous grains which have a stable sub-structure.

3,692,597

POLYURETHANE PROPELLANT COMPOSITIONS AND THEIR PREPARATION

Charles E. Brockway, Akron, Charles S. Schollenberger, Cuyahoga Falls, and Eugene F. Sachara, Cleveland, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed June 29, 1955, Ser. No. 518,985
Int. Cl. C06d 5/06
U.S. Cl. 149—19 24 Claims

2. A composition of matter useful in generating large volumes of gas on combustion and comprising essentially a finely-divided, solid, inorganic, strong, oxidizing salt, a cohesive, plastic, rubbery, combustible polymer of an aromatic diisocyanate and a hydroxyl terminated polyester of an aliphatic dibasic acid and a glycol and cured with a polyfunctional aliphatic hydroxyl curing agent and at least one solid, finely-divided, heat resistant burning rate modifier, said salt being present in a major amount sufficient to burn said polymer and said curing agent to obtain at least gaseous CO and H_2O on combustion, said polymer being present in a minor amount sufficient to bind said composition into a cohesive mass, said curing agent being present in an amount sufficient to cure said uncompounded polymer to a tough, rubbery state and said burning rate modifier being present in a very minor amount sufficient to enhance the linear burning rate of said composition.

3,692,598

CASTABLE NITRATE PROPELLANTS

Wallace W. Thompson, Tarzana, Calif., assignor to North American Aviation, Inc.

No Drawing. Filed Oct. 5, 1966, Ser. No. 584,945
Int. Cl. C06d 5/06
U.S. Cl. 149—19 5 Claims

1. The process of curing a prepolymer composition comprising:

mixing a carboxy terminated or substituted prepolymer and from 10 percent to 90 percent, by weight of the composition, of a nitrate salt with a compound selected from a group consisting of hexa[1-(2-methyl) aziridinyl] triphosphatriazine, hexa(1-aziridinyl) triphosphatriazine, and mixtures thereof; and

maintaining a temperature of between 10° C. and 150° C.; and

curing the reactants within said temperature range between 20 and 100 hours.

3,692,599

PROCESS OF FORMING HIGH-ENERGY PROPELLANT BINDERS

John B. Gardiner, Mountainside, and Herschel T. White, Montclair, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Feb. 28, 1963, Ser. No. 262,296
Int. Cl. C06d 5/06
U.S. Cl. 149—19 4 Claims

2. In curing a polyether acrylate which contains an NF_2 group attached to each of 2 to 4 carbon atoms in recurring monomer units and which is used as a binder in a high-energy solid rocket propellant, the improvement which comprises curing the polyether acrylate to a stronger binder with an admixed proportion of 0.1 to 4 wt. percent of a dialkyl peroxycarbonate having 2 to 4 carbon atoms in the alkyl groups as curing initiator, the curing being carried out at a temperature in the range of about 20° to 50° C.

4. In curing a polyether acrylate to form a stronger binder as set forth in claim 2, said polyether acrylate being an acrylate of poly[bis(NF_2) pentene-1 oxide] with 1 to 3 terminal acrylate groups, said polyether acrylate being mixed with a liquid oxidizer containing NF_2 groups, a solid oxygen containing oxidizer, and a metal fuel as it is being cured by diethyl peroxycarbonate as a dialkyl peroxycarbonate curing initiator.

3,692,600

HIGH TEMPERATURE-RESISTANT PROPELLANTS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 5, 1969, Ser. No. 885,394
Int. Cl. C06d 5/06
U.S. Cl. 149—19 2 Claims

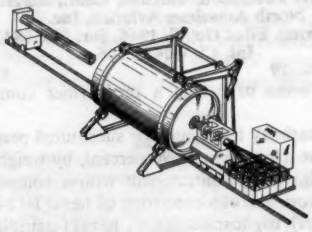
A novel compound, polybutadieneimine, serves as a crosslinking agent or chain-extending agent for carboxyl-terminated polybutadiene prepolymer or hydrogenated carboxyl-terminated polybutadiene prepolymer. The crosslinked prepolymer is used in conjunction with aluminum as the metal fuel, ammonium perchlorate as the inorganic oxidizer, and other additives to form a high temperature-resistant propellant. The chain-extended prepolymer is used in a like manner with the specified propellant ingredients.

3,692,601

METHOD FOR MAKING A STORAGE TANK BY APPLYING CONTINUOUS FILAMENTS TO THE INTERIOR SURFACE OF A ROTATING MOLD

William B. Goldsworth, Palos Verdes Estates, and Ethridge E. Hardesty, Pine Valley, Calif., assignors to Goldworthy Engineering, Inc.

Filed July 27, 1970, Ser. No. 58,482
Int. Cl. B32b 31/16; B65h 81/00
U.S. Cl. 156—74 7 Claims



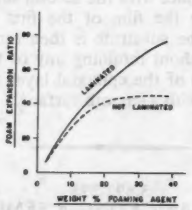
A fiberglass reinforced storage tank formed by constructing a filament reinforced cylindrical side wall and enclosing the transverse ends with a pair of end domes. The end domes are prefabricated in a circular mold of proper contour and size. A solvent dispersed mold release agent is sprayed into the mold over the entire mold surface. Glass filaments are then laid along with a spray of catalyzed binder resin in the rotating heated mold, beginning at the center and extending to the outer periphery thereof to form the resin cured rigid end domes. The annular cylindrical side wall is formed by applying fiberglass resin to the interior surface of a rotating cylindrical mold in the presence of a catalyzed binder resin with the formed end domes secured to the transverse ends of the mold during side wall formation. A particulate matter such as sand may be added to the composition. The mold is divided into longitudinal arcuate sections which are capable of separating for removal of a finally formed storage tank.

3,692,602

PROCESS FOR PREPARING A THERMOPLASTIC RESIN FOAM

Hiroshi Okada, Atsushi Osakada, and Satoyuki Minami, Sonoyama, Otsu-shi, Shiga-ken, Toshikazu Aoki, Beppo, Otsu-shi, Shiga-ken, Tetsuo Hisamori, Aobadai, Kohoku-ku, Yokohama-shi, Kanagawa-ken, and Hironobu Koyanagi and Hiromi Otsuka, Sonoyama, Otsu-shi, Shiga-ken, Japan, assignors to Toyo Rayon Company, Ltd., Tokyo, Japan

Filed June 23, 1969, Ser. No. 835,718
Int. Cl. B32b 5/20
U.S. Cl. 156—79 20 Claims



A process for making thermoplastic resin foam comprising forming a laminate comprised of a sheet of foamable thermoplastic interposed between and bonded to outer thermoplastic resin films. When the laminate is heated, a foam product is formed which, because the outer films limit the escape of foaming gas, may be thinner and/or have higher expansion ratios than thermoplastic resin foams heretofore producible by any other atmospheric process.

3,692,603

METHOD OF MANUFACTURING QUILTED FABRIC MATERIAL

Cecil John Rhodes, Great Kills, N.Y., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 871,530, Nov. 4, 1969, which is a continuation of application Ser. No. 471,435, Nov. 12, 1968, both now abandoned. This application Jan. 8, 1971, Ser. No. 105,132
Int. Cl. B29c 27/00; D03d 3/08
U.S. Cl. 156—85 1 Claim

Method for producing a laminated textile material possessing a quilt-like surface design corresponding to a predetermined pattern by pattern laminating two sheets of fibrous material having differential shrinkage properties and subjecting said laminate to shrinking conditions to shrink one of the layers to an extent substantially greater than the other layer.

3,692,604

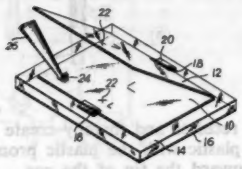
METHOD OF MAKING NEAR-POINT CARDS FOR BINOCULAR REFRACTION

Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Original application June 30, 1969, Ser. No. 837,631, now Patent No. 3,572,911. Divided and this application Oct. 12, 1970, Ser. No. 80,245

Int. Cl. B32b *31/04, 31/14*

U.S. Cl. 156—108 4 Claims



Near-point cards for binocular refraction and a lamination process for producing them are described wherein the product comprises a film having thereon a reproduction of the target for one eye with its image side upward cemented to a film having thereon a reproduction of the target for the other eye with its image side downward. The back of the film for the one eye is silvered and the two films are provided with a single frame which is riveted to center the targets. The process includes the steps of aligning the films, laminating them, re-aligning if necessary, spraying the back of the bottom film, and mounting the laminated films in a frame.

3,692,605

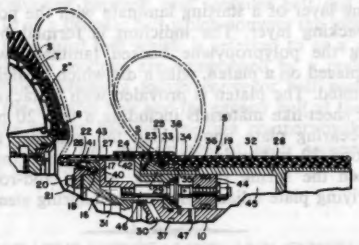
PLY TURN-UP AND SIDE WALL APPLYING BLADDER FOR TIRE BUILDING MACHINE AND METHOD

Armindo Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed July 22, 1970, Ser. No. 57,043

Int. Cl. B29j *17/20, 17/22*

U.S. Cl. 156—132 18 Claims



Ply turn-up and side wall applying mechanism includes an inflatable bladder having a folded or looped inner marginal portion adapted to be positioned adjacent the ends of a tire building drum, and an annular insert axially movable within the bladder between a retracted position permitting freedom of movement of the inner marginal portion for proper ply turn-up and an extended position restricting such movement for accurate placement of the side wall material on the tire during inflation of the bladder.

3,692,606

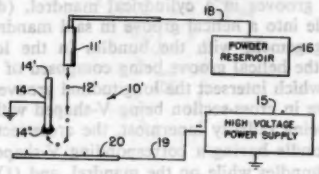
METHOD OF ELECTROSTATICALLY DEPOSITING PARTICLES ONTO THE TRAILING EDGE OF A SUBSTRATE

Emery P. Miller and Richard O. Probst, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corporation, Indianapolis, Ind.

Filed Mar. 28, 1969, Ser. No. 811,549

Int. Cl. B05b *5/00*

U.S. Cl. 156—151 14 Claims



An apparatus and a method for depositing charged particles of a powdery substance onto an edge of a substrate. The apparatus may include means for emitting particles of a powdery substance toward the substrate. Substantially all of the particles are propelled beyond a leading edge of the substrate to the vicinity of a trailing edge of the substrate. Another means is adjacent the trailing edge of the substrate which is capable of causing electrostatic deposition of the particles onto the trailing edge of the substrate.

3,692,607

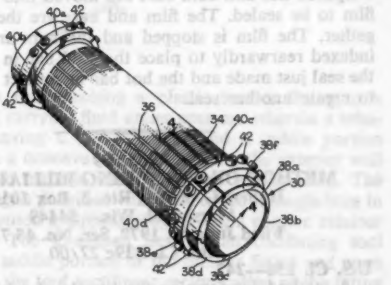
METHOD AND APPARATUS FOR MAKING A REINFORCED PLASTIC WELL SCREEN

Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind. 46544

Continuation-in-part of application Ser. No. 695,778, Jan. 4, 1968. This application Feb. 9, 1970, Ser. No. 9,635

Int. Cl. B65h *81/00*

U.S. Cl. 156—175 9 Claims

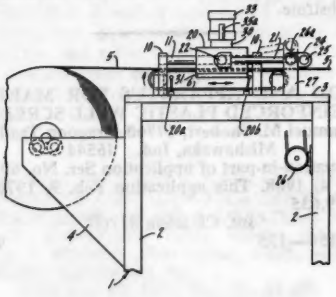


Apparatus for fabricating a well screen includes a hollow cylindrically shaped form having a multiple turn,

helical groove in the periphery thereof and a plurality of longitudinally extending grooves in the periphery which intersect the helical turns. The helical groove is in a form corresponding to a screw thread and serves as a mold for receiving bundles of plastic-wetted glass filaments which can conform to the shape of the mold. The cylindrically shaped form is composed of a plurality of part-cylindrical segments detachably secured together, these segments being individually movable radially inwardly for collapsing the form. Means are provided for securing the segments together in the cylindrical shape whereby plastic impregnated bundles of glass filaments may be inserted into all of the grooves.

The method of this invention includes the steps of (a) wetting a plurality of glass filaments with a liquid heat-hardenable plastic, (b) collecting said wetted filaments together into an elongated bundle, (c) inserting length portions of the bundle in circumferentially spaced longitudinal grooves in a cylindrical mandrel, (d) winding the bundle into a helical groove in said mandrel in overlying engagement with the bundles in the longitudinal grooves, the helical groove being composed of a plurality of turns which intersect the longitudinal grooves, the helical groove in cross-section being V-shaped with the apex thereof being radially innermost, the cross-section of the helical bundle having a corresponding V-shape, (e) curing said bundles while on the mandrel, and (f) removing the mandrel from the cured bundle assembly.

3,692,608
SEALING MEANS AND METHOD
Ernest Milton Risgaard, Baraboo, Wis., assignor to Nasco Industries, Inc., Fort Atkinson, Wis.
Filed Jan. 20, 1971, Ser. No. 108,086
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—282 **9 Claims**



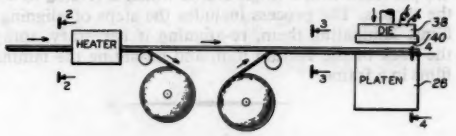
Spaced hot and cold bars are moved into contact with film to be sealed. The film and bars are then moved together. The film is stopped and the bars are raised and indexed rearwardly to place the cold bar in contact with the seal just made and the hot bar in contact with the film to create another seal.

3,692,609
METHOD OF PRODUCING BILLIARD CUE
Hubert G. Eckes, Rte. 3, Box 101A, Marshfield, Wis. 54449
Filed June 12, 1970, Ser. No. 45,711
Int. Cl. B29c *27/00*
U.S. Cl. 156—242 **7 Claims**

A method for forming the handle of a billiard cue by cutting out the design of the handle in the body of the cue, including the conventional prongs or points above the grip of the handle to form tapered recesses in the cue so that the design of the handle is formed in intaglio. A paper sleeve is then tightly drawn about the portion of the cue containing the intaglio design and plastic is poured into the space between the sleeve and the body of the cue

to fill the recesses and thereby create the desired handle design in plastic with the plastic prongs extending from the grip toward the tip of the cue.

3,692,610
METHOD AND APPARATUS FOR MAKING A METALIZED INDICIUM
Irving Kornstein, 200 Leroy Ave., Tenafly, N.J. 07670
Filed Sept. 10, 1970, Ser. No. 70,951
Int. Cl. B32b *7/06, 3/00*
U.S. Cl. 156—249 **4 Claims**

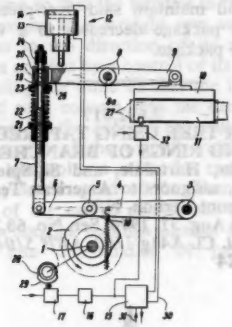


A method and apparatus for making a metalized pressure-sensitive adhesive backed indicium from a laminate having a polypropylene backing layer in which the laminate is provided with a metalized polyester film outer layer, a vinyl film interlayer adjacent the metalized film layer, a rubber saturated paper interlayer adjacent the vinyl film interlayer and a pressure-sensitive adhesive interlayer between the vinyl film interlayer and the polypropylene backing layer. The polypropylene backed laminate is provided by replacing a silicone-coated paper backing layer of a starting laminate with the polypropylene backing layer. The indicium is formed by hot-die cutting the polypropylene backed laminate, which has been placed on a platen, with a die which is slightly worn or blunted. The platen is provided with a stacked plurality of sheet-like materials including a first 20 mil spring steel bearing plate upon which the laminate is placed, a second 20 mil spring steel plate, a paper make-ready between the spring steel plates, and a cold-rolled steel underlying plate adjacent the second spring steel plate.

3,692,611
HEAT SEAL TOOL
Paul Kühnle, Winnenden, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany
Filed Dec. 28, 1970, Ser. No. 101,618
Int. Cl. B30b *15/34;* **G05g** *15/00*
U.S. Cl. 156—358 **8 Claims**

A heat sealing arrangement in a packaging machine, in which a mechanical drive sequentially operates the heat seal tool in correlation with the speed of the machine. A pneumatic or electric control mechanism, including a

delay switch, is arranged to intercede in the sealing or welding operation and movement of heat seal tool when



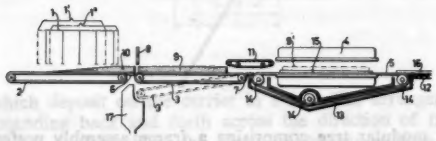
the drive is slowed down or interrupted, in order to complete the sealing step.

3,692,612

SYSTEM FOR MANUFACTURING PARTICLE BOARD OR THE LIKE

Bengt Carlsson and Mauritz R. G. Sundberg, Motala, Sweden, assignors to Aktiebolaget Motala Verkstad, Motala, Sweden

Filed Dec. 18, 1968, Ser. No. 784,843
Claims priority, application Sweden, Dec. 22, 1967, 17,732/67; Dec. 6, 1968, 16,742/68
Int. Cl. B32b *5/16;* B29j *5/08*
U.S. Cl. 425—305 2 Claims



There is disclosed a machine for manufacturing particle board according to which wood chips are spread on a conveyor belt, referred to as a spreader belt, forming a slab which is cut into sections of predetermined length by a saw positioned between said spreader belt and a belt referred to as a transfer belt which conveys the individual sections to a third belt which is referred to as a presser belt where the sections are compressed by a press, and the machine includes a fourth conveyor belt positioned between the transfer belt and the presser belt at the input end of the presser belt for exerting comparatively light pressure against the top surface of each section as it passes to the press.

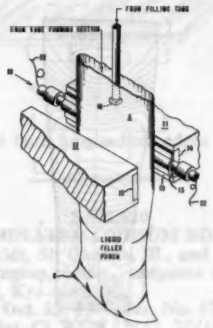
3,692,613

APPARATUS FOR SEALING AND CUTTING LAYERS OF THERMOPLASTIC FILM

Ronald E. Pederson, Kingston, Ontario, Canada, assignor to Du Pont of Canada, Limited, Montreal, Quebec, Canada

Filed May 18, 1971, Ser. No. 144,431
Claims priority, application Canada, June 10, 1970, 085,158
Int. Cl. B32b *31/00;* B30b *15/34*
U.S. Cl. 156—498 6 Claims

An improved electrical impulse sealer which is mounted in one of a pair of sealing jaws comprising a hollow metal tube extending beyond each end of the sealing jaw and adapted to convey a cooling fluid, two metal fins less than one-third the thickness of the tube wall and connected to the tube along the length of the sealing jaw, the fins projecting in opposite directions from the tube and being in substantially the same plane as the layers of film, the tube and fins being adapted to contact one of the



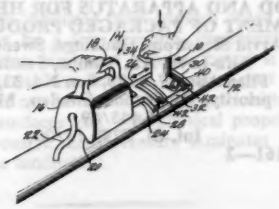
layers of film when the sealing jaws are closed. This impulse sealer is particularly useful in sealing and simultaneously cutting through at least two layers of thermoplastic film moving intermittently in one plane such as that encountered in a liquid "form-and-fill" machine used to package low thermal conductive liquids such as oil or ethylene glycol.

3,692,614

PLASTIC SERVICE FITTING AND METHOD AND APPARATUS FOR ATTACHING SAME

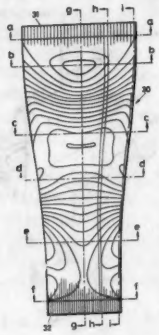
Robert R. Roos, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Sept. 8, 1970, Ser. No. 70,115
Int. Cl. B32b *31/00*
U.S. Cl. 425—108 2 Claims



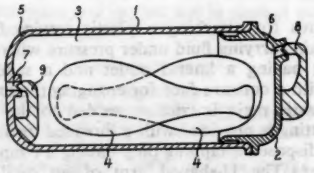
Apparatus for attaching a plastic service fitting to a plastic main carrying fluid under pressure wherein a tubular fitting having a lateral outlet and a saddle portion formed with a concave face for engaging the exterior wall of the plastic main is friction welded to the main. The tubular fitting is provided with a threaded through-bore in which is disposed a tapping plug having a coupon retainer and cutter. The U-shaped arm of an oscillating tool engages the saddle portion of the tubular fitting and upon actuation of the tool rectilinear reciprocation of the fitting is effected so that, while pressure is applied to the tubular fitting, frictional heat is developed between the surface of the saddle portion of the tubular fitting and the exterior wall of the plastic main to melt the material of the surfaces in contact so that fluid-tight seal is formed.

3,692,615
APPARATUS FOR FORMING LONGITUDINAL CORRUGATIONS IN SHEET MATERIAL
Koichiro Ohmori, 1421, 2-chome, Matsugaoka, Kugenuma, Fujisawa, Japan
Filed Mar. 12, 1970, Ser. No. 19,032
Int. Cl. B31f *1/20*
U.S. Cl. 425—370 **8 Claims**



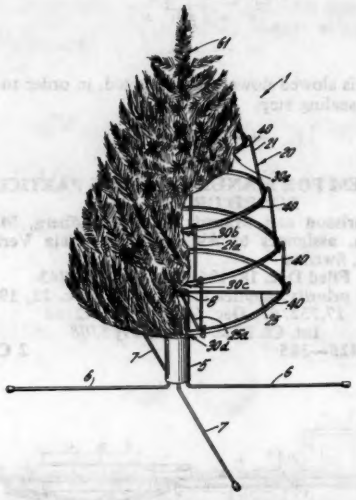
There is disclosed an apparatus for forming longitudinal corrugations in the web of sheet material, comprising a generally curved, rigid and elongated guide bed having an inlet end and an outlet end each disposed perpendicular to the direction of the sheet travel, a plurality of flutes extending between said outlet and inlet ends of the bed and having alternate ridges and grooves, said flutes converging toward said outlet end becoming progressively greater in amplitude and smaller in period, the guide surface containing said ridges and grooves of the flutes has a geometry such that the longitudinal surface lengths of the sheet material measured with a certain surface distance from the longitudinal side edges of the bed and transverse wavy surface lengths of the sheet material measured with a certain surface distance from the inlet or outlet end of the bed are held substantially equal, respectively, at any portion of the bed.

3,692,616
METHOD AND APPARATUS FOR HEAT TREATMENT OF PACKAGED PRODUCTS
Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Apr. 27, 1970, Ser. No. 32,184
Claims priority, application Sweden, May 7, 1969, 6,443/69
Int. Cl. F25b *13/00*
U.S. Cl. 161—2 **2 Claims**



The packaged product is placed in a container and heated by passing heat-inducing waves through the container walls from an external source while the package is surrounded by a medium which increases in pressure in response to an internal pressure increase in the package, thereby providing an over-pressure around the package to prevent destruction thereof due to said internal pressure increase. A cooling medium under pressure is then directed into the container and caused to flow around the package and maintain said over-pressure until the pressure in the package decreases to a value which is harmless to the package.

3,692,617
MODULAR TREE USING TAPERED FRAME AND RINGS OF BRANCHES
Theodore Marks, Hartsdale, and Si Spiegel, Briarcliff Manor, N.Y., assignors to American Technical Industries, Inc., Mount Vernon, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,319
Int. Cl. A41g *1/00*; A47f *5/04*
U.S. Cl. 161—24 **4 Claims**

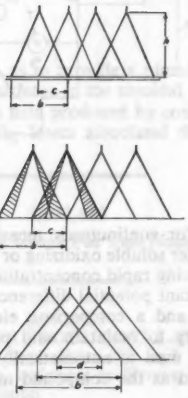


A modular tree comprising a frame assembly preferably of wire elements which can be secured together to define a tapering frame. Rings are provided of different diameters to fit over said frame, each ring having a plurality of branch elements secured at points intermediate the branch ends to respective points along the ring. The branches face outwardly and define rows of simulated tree branches.

3,692,618
CONTINUOUS FILAMENT NONWOVEN WEB
Oskar Dorschner, Bad Homburg, Franz Josef Carduck, Bergen-Enkheim, and Christoph Storkebaum, Egelsbach, Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany
Continuation-in-part of abandoned applications Ser. No. 693,017, Dec. 22, 1967, and Ser. No. 783,556, Dec. 13, 1968. This application Oct. 9, 1969, Ser. No. 865,128
Claims priority, application Germany, Oct. 8, 1969, P 19 50 669.5
Int. Cl. D04h *1/04, 3/16*
U.S. Cl. 161—72 **14 Claims**

Formation of a nonwoven web suitable for the production of textile-like or paper-like sheet material by simultaneously spinning a multiple number of continuous filaments of a synthetic polymer such as polypropylene, gathering the filaments into a straight row of side-by-side, substantially evenly spaced apart, untwisted bundles, each containing at least 15 filaments, simultaneously drawing each bundle downwardly at a velocity of at least 3,000

meters per minute in an individual surrounding gas column flowing at supersonic velocity, as for example by passing the bundles through a row of air guns and directing the same to impinge on a horizontal carrier belt moving in a direction so that the bundles in their surrounding gas columns extend in a straight row across the carrier at right angles to the direction of its movement; controlling the gas column by a control of its divergent width and/or oscillating the same so that the limits of contact of the edge of each column with the carrier overlap the limits of contact of the edge of the adjacent column by at least 50 percent of the overall width of contact of an individual gas column with the carrier, and maintaining the lay-down speed of the filaments in relation to the speed of the carrier movement so that prior to and/or as the bundles impinge against the carrier, they are divided into sub-bundles of parallel filaments



which deposit on the carrier in a loop-like arrangement extending back and forth across the direction of travel of the carrier within the limits of the gas column surrounding the bundle, forming a web which is characterized by a multiple number of side-by-side lengthwise sections, each section being formed by the sub-bundles of parallel filaments lying in a loop-like arrangement extending back and forth across the width of the section and containing multiple overlapping secondary smaller loops and swirls with the adjacent individual sections overlapping each other without stratification and with the loops, secondary loops and swirls of one section randomly substantially completely intermingled with the overlapping portion of the adjacent section. The web after its lay-down may be initially stabilized by heat-sealing, needling or treating with a binder such latex and subjected to further treatments conventional in the nonwoven art.

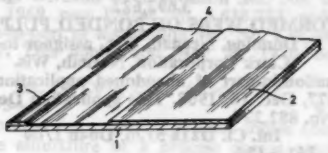
3,692,619

PROTECTIVE BANDAGE FOR PIPELINES TO BE PROTECTED AGAINST CORROSION

Benno Wedekind and Werner Kirsch, both of Felderstr. 24, Leverkusen-Rheindorf, Germany

Filed Feb. 9, 1970, Ser. No. 9,737
Claims priority, application Germany, Mar. 1, 1969, G 69 08 286.6
Int. Cl. B32b *3/00*
U.S. Cl. 161—88 **2 Claims**

A bandage for protecting pipelines against corrosion is disclosed which is formed from a plastically and elastically deformable plastic tape. The plastic tape is adhesive on both sides and spaced apart reinforcing strips are provided on at least both longitudinal edges and on one side of the tape.

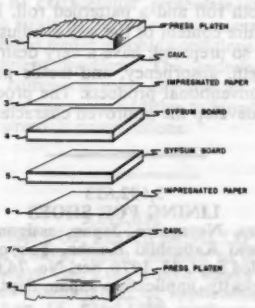


3,692,620

LAMINATED GYPSUM BOARD

Robert L. Schmidt, St. Charles, Ill., and Hubert J. Beckman, Bloomington, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 23, 1967, Ser. No. 677,264
Int. Cl. B32b *13/12, 27/10*
U.S. Cl. 161—88 **5 Claims**



Laminates are produced from gypsum board and resin-saturated paper by a low pressure, thermosetting process. The resulting laminated gypsum board is useful as a building material, for example, on or as part of a wall. These laminates can be made at a low cost with a variety of decorative surfaces and with physical properties similar to the expensive, high pressure laminates (e.g. melamine-aldehyde laminates).

3,692,621

UNIVERSAL GRAPHIC DISPLAY MATERIAL

Everett Bryant Frech, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 738,780, June 21, 1968, now Patent No. 3,549,463. This application July 10, 1970, Ser. No. 53,986
The portion of the term of the patent subsequent to Dec. 22, 1987, has been disclaimed
Int. Cl. B32b *3/30;* B43l *1/12;* G03b *21/60*
U.S. Cl. 161—116 **3 Claims**

A durable graphic display material suitable for displaying written, projected, and three dimensional subject matter is disclosed. The new material includes an embossed polyvinyl fluoride film outer surface having a matte finish, bonded to a substrate layer of thermoplastic material. The

new display material also includes a ferrous component for attracting and holding magnetized articles such as display markers used for illustrative purposes.

3,692,622

AIR FORMED WEBS OF BONDED PULP FIBERS

Charles E. Dunning, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of abandoned application Ser. No. 783,877, Dec. 16, 1968. This application Dec. 4, 1969, Ser. No. 882,257
Int. Cl. D21h 5/26; D04h 1/04
U.S. Cl. 161—124 10 Claims

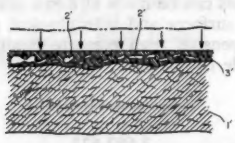
Paper products useful as sanitary wipes and towelling are prepared by air laying a web of wood pulp fibers and binding the web by passing it through a nip formed between a smooth roll and a patterned roll. Prior to bonding, the moisture content of the web is adjusted to 6–35%. The products so prepared, have a very desirable combination of strength, absorbency, and tactile properties compared with conventional products. The products need not be creped to develop the improved characteristics.

3,692,623

LINING FOR SHOES

Yasuo Kimura, Neyagawa, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 21, 1970, Ser. No. 74,015
Claims priority, application Japan, Sept. 27, 1969, 44/77,274
Int. Cl. B32b 5/18
U.S. Cl. 161—159 4 Claims



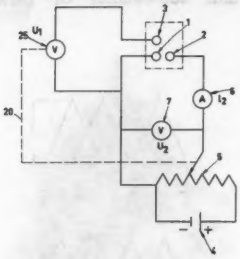
A continuously porous synthetic resin layer having numerous macropores is provided on the surface of a substrate, the synthetic resin layer being compressed to a thickness of not greater than 70% of the original thickness with application of heat so as to deform the macropores to depressed pores, while being rendered smooth-surfaced or provided with a pattern-embossed smooth surface, if desired, the layer being finished by further coating, and the lining for shoes thus obtained is satisfactory in air permeability, moisture permeability, water absorption and has a smooth surface and excellent touch.

3,692,624

MEASURING AND REGULATION METHOD, FOR WATER SOLUBLE, OXIDIZING OR REDUCING COMPOUND PARTICULARLY IN PULP BLEACHING

Ilmo Yrjala, Rauma, Finland

Filed Feb. 19, 1970, Ser. No. 12,681
Claims priority, application Finland, Feb. 21, 1969, 563/69
Int. Cl. D21c 7/12
U.S. Cl. 162—49 7 Claims



A method for continuously measuring and regulating dosage for water soluble oxidizing or reducing compounds of the type having rapid concentration variation by maintaining a constant potential difference between a measuring electrode and a comparison electrode. The current value necessary to maintain said potential difference is measured and used to automatically regulate the dosage in a compound as the compound moves with respect to the electrodes.

3,692,625

PROCESS FOR COMBATTING SLIME IN PAPER PULP BY USING AMIDINOUREAS AND AMIDINOTHIOUREAS

Royal A. Cutler, Sand Lake, and Samuel Schalit, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Original application Aug. 5, 1968, Ser. No. 749,986, now Patent No. 3,652,766. Divided and this application Nov. 19, 1970, Ser. No. 91,164
Int. Cl. D21d 3/00; D21h 5/22
U.S. Cl. 162—161 14 Claims

A method of combatting slime in paper pulp which comprises using antibacterial and antifungal mono- and disubstituted amidinoureas and amidinothioureas which are obtained by interaction of guanidines and isocyanates or isothiocyanates.

3,692,626

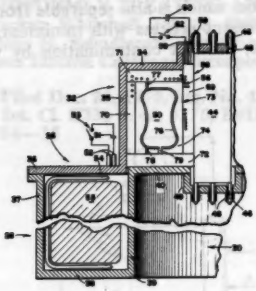
APPARATUS FOR FORMING AND CONTAINING PLASMA

Tihiro Ohkawa, La Jolla, Calif., assignor to the United States of America as represented by the Atomic Energy Commission

Filed Mar. 21, 1969, Ser. No. 809,280
Int. Cl. G21b 1/00
U.S. Cl. 176—3 8 Claims

A plasma method and apparatus is provided with a toroidal palsma confinement region in which a toroidal magnetic field is produced by external magnetic field producing means. A toroidal electrical field is induced within the region by conductors disposed outside of the plasma region

so as to produce and maintain a plasma current. The electrical field is produced without producing any substantial additional magnetic field in the region. A second magnetic field in the region is produced by means disposed



outside the region so as to provide a plurality of nests of closed toroidal flux surfaces in the toroidal plasma region, thus approximating a field produced by conductors within the region without the losses associated therewith.

3,692,627

Patent Not Issued For This Number

3,692,628

PROCESS FOR PRODUCING L-SERINE

Kiyoshi Nakayama, Sagamihara-shi, and Hiroshi Kase, Koganei-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,202
Claims priority, application Japan, Apr. 18, 1968, 43/25,529
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **13 Claims**

L-serine is produced by a fermentation process which comprises culturing a microorganism belonging to the genus Arthrobacter, Brevibacterium or Corynebacterium in an aqueous nutrient medium which does not contain DL-glyceric acid as a substrate. Inexpensive carbohydrates or hydrocarbons can be used as the carbon source in the medium. The strains exemplified include *Arthrobacter paraffineus, Brevibacterium ketoglutamicum* and *Corynebacterium hydrocarboclastus.*

3,692,629

OXIDATION OF STEROIDS

Ewart Ray Herbert Jones and George Denis Meakins, Oxford, and Andrew Samuel Clegg, Mexborough, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,432
Claims priority, application Great Britain, Apr. 6, 1970, 16,255/70
Int. Cl. C07c *167/08*
U.S. Cl. 195—51 R **27 Claims**

Process for the microbiological 1β,11α-bis-hydroxylation of ring A- and C-saturated 5α- and 5(6)-dehydropregnan-20-ones wherein the steroid substrate is incubated with one of the microorganisms *Aspergillus ochraceus, Aspergillus nidulans, Rhizopus arrhizus, Corticium praticola* or *Polystictus sanguineus* and recovering the bishydroxylated product.

3,692,630

COMPOSITION FOR PREPARING PROCESS CHEESE

Thomas P. Kichline, Chesterfield, and Lewis G. Scharpf, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Division of application Ser. No. 843,849, July 22, 1969, now Patent No. 3,635,733, and a continuation-in-part of application Ser. No. 639,306, May 18, 1967. This application May 21, 1970, Ser. No. 48,593
Int. Cl. C07g *7/02*; A23c *19/12*
U.S. Cl. 195—63 **5 Claims**

A composition for preparing process cheese comprising an intimate admixture of a process cheese emulsifying agent in an amount of at least 90% of the composition and a proteolytic enzyme from bacterial or fungal source in an amount to provide 1 casein unit of protease activity to about 8,000 casein units of protease activity per gram of emulsifying agent.

3,692,631

METHOD FOR BACTERIAL PROTEINASE

Alworth D. Larson and Hugh D. Braymer, Baton Rouge, and Evest A. Broussard III, Metairie, La., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,850
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **2 Claims**

High yields of extracellular proteinase are elaborated when a specific strain of *Serratia marcescens* (ATCC No. 25,419) is cultured under areobic conditions in a protein-containing nutrient medium. The proteinase, isolated from cell-free culture, is most effective at alkaline pH's and is suitable for use as an additive to laundry detergents or in laundry presoak compositions.

3,692,632

PROCESS FOR PRODUCING LIPASE

Osamu Terada, Tokyo, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 572,688, Aug. 16, 1966. This application July 11, 1968, Ser. No. 743,939
Claims priority, application Japan, Aug. 17, 1965, 40/49,715
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **4 Claims**

A process for producing lipase by fermentation. A microorganism of Trichosporon is cultured in a nutrient medium under aerobic conditions at 25°–35° C.

3,692,633

PROCESS FOR PREPARING 6-CHLORO-2-QUINOXALINECARBOXYLIC ACID-1,4-DIOXIDE

Edward O. Stapley, Spotwood, N.J., Justo M. Mata, Madrid, Spain, and Frank J. Wolf, Westfield, and Thomas W. Miller, Carteret, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Sept. 26, 1968, Ser. No. 763,008, now Patent No. 3,598,819, dated Aug. 10, 1971. Divided and this application Aug. 21, 1970, Ser. No. 66,129
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **1 Claim**

A novel antibiotic substance, identified as 6-chloro-2-quinoxalinecarboxylic acid-1,4-dioxide, has been produced by cultivating strains of *Streptomyces ambofaciens,* var. NRRL 3455. The salts, as well as derivatives such as esters, amides and N-substituted amides, likewise demonstrate antibiotic activity.

3,692,634

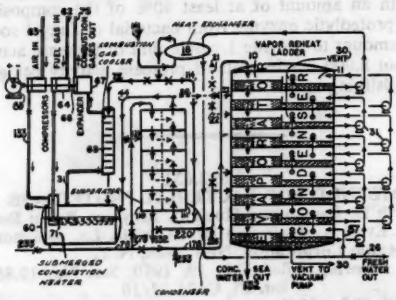
METHOD FOR PRODUCING PURE WATER FROM SEA WATER AND OTHER SOLUTIONS BY FLASH VAPORIZATION AND CONDENSATION

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Continuation-in-part of application Ser. No. 826,135, May 20, 1969. This application May 7, 1970, Ser. No. 35,485

Int. Cl. B01d 3/10

U.S. Cl. 203—11 35 Claims



Various liquid solutions with or without fine suspended particles may be purified by: (a) flash evaporation for cooling the heated dilute solution; after (b) a process which may be physical or chemical; preceded by (c) a preheating of the liquid solution using the heat of condensation of the vapors from (a). The process may be an extraction, a precipitation of a solid at a high temperature, or a chemical reaction; e.g., a submerged combustion which may supply the required external heat by oxidation with added air or oxygen of either a fluid fuel or combustible organic material dissolved or suspended in the solution. Purification here may be by removing impurities by combustion or other chemical action or by extracting or distilling some of the water from the dilute solution.

3,692,635

PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY EXTRACTIVE DISTILLATION

George B. Fozzard, % Phillips Petroleum Co., Bartlesville, Okla. 74003

No Drawing. Filed May 19, 1971, Ser. No. 145,050

Int. Cl. B01d 3/40; C07c 19/08

U.S. Cl. 203—62 4 Claims

A process for separating 1,1,2-trichlorotrifluoroethane from a first mixture consisting essentially of 1,1,2-trichlorotrifluoroethane and 1,2-dichloro-1,1-difluoroethane by adding a cycloalkanone to the first mixture to form a resultant second mixture and thereafter extractively distilling the second mixture in an extractive distillation zone to separate the 1,1,2-trichlorotrifluoroethane from the 1,2-dichloro-1,1-difluoroethane.

3,692,636

SEPARATION OF A MIXTURE COMPRISING VINYL ACETATE, ETHYL ACETATE, AND ACETIC ACID BY DISTILLATION

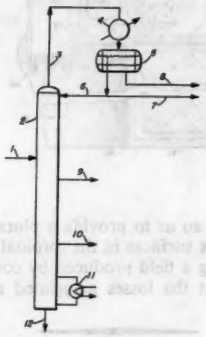
Juan L. Huguet, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,957

Int. Cl. C07c 67/06

U.S. Cl. 203—71 16 Claims

Vinyl acetate substantially free from heavy ends is separated by an azeotropic distillation method from a crude mixture comprising vinyl acetate, water, ethyl acetate, and acetic acid such as the reaction product obtained in the reaction of ethylene and acetic acid in the presence of molecular oxygen and a catalyst to form vinyl acetate. When the vinyl acetate-forming reaction is carried out in the liquid phase in the presence of a noble metal and a redox agent, the crude product also typically contains 1-acetoxy-1-butene, which is also separable from the vinyl acetate by the present process with minimum formation of butyraldehyde, product contamination by which is a



problem in the prior art vinyl acetate recovery processes. The process comprises azeotropically distilling the vinyl acetate out of the crude feedstock in a column operated to maitain the temperature breakpoint below the feed point. Unusually effective separation of vinyl acetate from higher-boiling compounds such as ethyl acetate obtains. In a particular embodiment, ethyl acetate, dioxolane, and other compounds boiling between vinyl acetate and acetic acid are removed in a side stream drawn from the column in the vicinity of the temperature breakpoint.

3,692,637

METHOD OF FABRICATING A HOLLOW STRUCTURE HAVING COOLING CHANNELS

Carl-Helmut Dederra, 87a Mozartstrasse, 8012 Ottobrunn, Germany, and Karl Butter, 17 Hans Denziger Str., 8 Munich 13, Germany

Original application Nov. 15, 1967, Ser. No. 683,176. Divided and this application Nov. 24, 1969, Ser. No. 877,591

Int. Cl. C03b 7/02

U.S. Cl. 204—9 2 Claims

A method of fabricating a structural part for use as a wall of a device subject to high temperatures, such as a rocket combustion chamber, a heat shield, or a nose cone of a missile wherein individual tubular elements having either an opened or a closed cross section are fitted together to form a wall and are connected in a mechanically strong and pressure proof manner by a layer of material which is applied galvanoplastically on either one

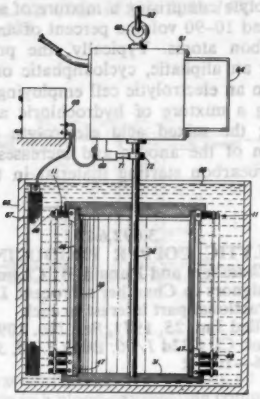
or both sides thereof. Various structural configurations are possible and in some instances the resultant structure is reinforced by a reinforcing member such as a steel strip.

3,692,638

PROCESS FOR SUPPORTING AND NON-UNIFORMLY TREATING ARTICLES

John J. Rackus, Whitehall, John P. Skilbeck, Allentown, and Alfons H. Szkudlapski, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,176
Int. Cl. C23b *5/48, 5/70;* B01k *3/00*
U.S. Cl. 204—15 14 Claims



In making transistors using lead frames, improved bonds and savings in gold result from plating gold more heavily and in controlled amounts at the ends of the lead frames where wire and semiconductive chip bonds are to be made. To accomplish such nonuniform plating, the lead frames are arranged in a cylindrical configuration so that the ends of the frames where bonds are to be made are on the outer periphery of the configuration and are spaced one from the other. Also, the opposite carrier strips, which are eventually trimmed away, are on the internal portion of the configuration. A cathode is connected to the lead frames, which are then rotated past an anode in a plating bath, thereby nonuniformly plating the lead frames. Such arrangement of the lead frames and rotation of them in the bath also results in the plating of a large number of frames using a minimum volume of a tank holding the bath. An increase in plating rates is also achieved.

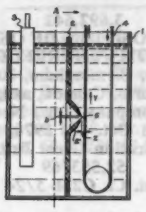
3,692,639

MULTIPLICATION OF METAL SURFACE, BY ELECTROPLATING OR ANODIC DISSOLUTION

Alkis Alexander Delmousos, Athens, Greece, assignor to Center of Scientific and Applied Research Ltd., Athens, Greece

Filed Sept. 4, 1970, Ser. No. 69,723
Claims priority, application Greece, Oct. 13, 1969, 25,508/69
Int. Cl. C23b *5/58, 5/68*
U.S. Cl. 204—28 11 Claims

A method of and an apparatus for multiplying the effective area of a metal surface by electroplating and/or anodic dissolution by using a high density electroplating current while at the same time the current density at the start of the electroplating can be suitable for maintaining the cohesion with the original surface, and simultaneously neutralizing all anomalies which result from a steady strong hydrogen release which cannot be neutralized through the known method of cathode movement, the increased current density at the cathode is achieved and the harmful effect of the released hydrogen is avoided.

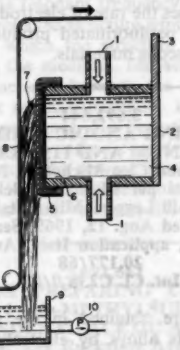


3,692,640

CONTINUOUS ANODIC OXIDATION METHOD FOR ALUMINUM AND ALLOYS THEREOF

Takeshi Hamabe and Takashi Suzuki, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 14, 1970, Ser. No. 72,022
Claims priority, application Japan, Sept. 18, 1969, 44/75,605; Nov. 25, 1969 (utility model), 44/112,251; Dec. 9, 1969, 44/99,659, 44/99,660; Dec. 11, 1969 (utility model), 44/118,210, 44/118,203
Int. Cl. B01k *3/00;* C23b *9/02*
U.S. Cl. 204—28 7 Claims



A method of continuously forming an oxide film on aluminum and alloys thereof by anodic oxidation without resorting to a conventional process using an electrolytic cell, and an apparatus for practicing the method which is compact in size and is capable of not only high current density treatment and high speed treatment but also various types of electrolysis.

3,692,641

ELECTRODEPOSITION OF LOW STRESS RUTHENIUM ALLOY

Salvatore Losi, Geneva, René Henzi, Carouge, and André Meyer, Grand-Saconnex, Switzerland, assignors to Sel-Rex Corporation, Nutley, N.J.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,886
Claims priority, application Switzerland, Mar. 20, 1970, 4,235/70
Int. Cl. C23b *5/32*
U.S. Cl. 204—43 10 Claims

Thick electrodeposits of ruthenium alloy can be obtained by adding an element of Group III–A of the

Periodic Table. The deposits obtained are primarily characterized by their low stress and absence of surface cracks at thicknesses up to about 10 millimicrons.

3,692,642
ELECTRODEPOSITION OF OSMIUM AND BATHS THEREFOR
John Michael Notley, Birmingham, England, and James Barr, Dundas, Ontario, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,680
Claims priority, application Great Britain, Oct. 27, 1969, 52,553/69
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 10 Claims

An osmium plating bath is composed of a soluble hexachlorosmate (IV), for example, diammonium hexachlorosmate, acidified with sulfuric or sulfamic acid or a mixture thereof. Plating is accomplished from such a bath which may also contain ammonium sulfamate as an anodic depolarizer, at a pH below about 4 and at a current density of from about 1 to about 8 amperes per square decimeter.

3,692,643
ELECTROFLUORINATION PROCESS USING THIOESTERS
Dewey George Holland, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Filed May 17, 1971, Ser. No. 144,253
Int. Cl. C07b *29/06;* C07c *51/58, 143/70*
U.S. Cl. 204—59 R 18 Claims

The presence of a small amount of a thioester of aromatic or aliphatic carboxylic acids in the electrolyte during the electrofluorination of alkyl substituted or unsubstituted, aromatic or aliphatic, sulfonic or carboxylic, acid halides decreases the rate of electrode decomposition, raises the yield of perfluorinated product and decreases the formation of viscous materials.

3,692,644
SELF-COLORING ANODIC OXIDATION OF ALUMINUM AND ITS ALLOYS
Giancarlo Paolini and Ciro Micheletti, Novara, Italy, assignors to Societá per l'Esercizio dell'Instituto Sperimentale dei Metalli Leggeri, Milan, Italy
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,503
Claims priority, application Italy, Aug. 14, 1968, 20,177/68
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 1 Claim

Improvements are obtained in the anodic oxidation of aluminum or its alloys by electrolytic treatment in aqueous solutions in which the aluminum acts as an anode, by separating the electrolytic cell into an anodic compartment and a cathodic compartment with a porous separator. Formation of precipitates in the electrolyte solution with subsequent clogging and other disadvantages are minimized. Further improvement is obtained by using different electrolytes in the two compartments.

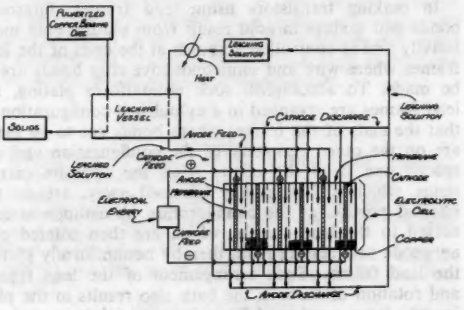
3,692,645
ELECTROLYTIC PROCESS
Borut Marincek, Kusnacht, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
No Drawing. Original application May 15, 1967, Ser. No. 638,249, now Patent No. 3,562,135, dated Feb. 9, 1971. Divided and this application Oct. 19, 1970, Ser. No. 82,153
Int. Cl. C22d *3/00, 3/08, 3/12*
U.S. Cl. 204—67 1 Claim

Process for the electrolysis of molten oxides, especially of alumina, in which a gas permeable anode is separated from the melt being electrolyzed by a layer, in contact with the anode and the melt, of an oxygen-ion-conducting material, for example zirconium oxide stabilized with calcium oxide or other oxides, which is resistant to the melt at the temperature of the electrolysis.

3,692,646
ELECTROCHEMICAL CHLORINATION OF HYDROCARBONS IN AN HCl-ACETIC ACID SOLUTION
William B. Mather, Jr., Hopewell Junction, and Edwin R. Kerr, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,484
Int. Cl. C07b *9/00, 27/06*
U.S. Cl. 204—81 9 Claims

A process of electrochemically halogenating hydrocarbons in an aqueous hydrohalic acid electrolyte comprising passing current from a cathode to an anode immersed in an electrolyte comprising a mixture of aqueous hydrohalic acid and 10–90 volume percent of an aliphatic acid of 2–4 carbon atoms. Typically, the process involves chlorinating an aliphatic, cycloaliphatic or aromatic hydrocarbon in an electrolytic cell employing graphite electrodes using a mixture of hydrochloric acid and acetic acid. Using the mixed acid electrolyte prevents rapid deterioration of the anodes and increases the solubility of the hydrocarbon starting material in the electrolyte.

3,692,647
ELECTROLYTIC COPPER PRODUCING PROCESS
Wayne L. Chambers and Ronald W. Chambers, Fontana, Calif., assignors to Chamber's Process, Ltd., and Philip Zurich, fractional part interest to each
Filed Jan. 25, 1971, Ser. No. 109,473
Int. Cl. C22d *1/00;* B01k *3/08, 3/10*
U.S. Cl. 204—105 R 34 Claims



A process for producing metallic copper comprising the steps of: (1) leaching a copper-containing ore with a leaching solution under substantially oxygen-free conditions, the leaching solution comprising cupric chloride and a solubilizing agent for cuprous chloride, the leaching being for a time at a temperature sufficient to chemically convert at least a substantial proportion of the copper in the ore to a reaction product of the copper and the agent, which product is soluble in the resulting solution: (2) separating the remaining solids from the resulting solution subsequent to the leaching step, while maintaining the substantially oxygen-free conditions; (3) electrolytically (a) reducing at least a portion of the resulting solution to precipitate copper metal from the reduced solution and (b) oxidizing at least a portion of the resulting solution to produce a solution comprising cupric chloride; the electrolytic reduction and oxidation being carried out under conditions whereby the reduced solution is of lesser specific gravity than the resulting solution,

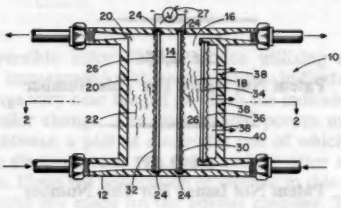
and whereby the oxidized solution is of greater specific gravity than the resulting solution, while maintaining the substantially oxygen-free conditions; (4) combining: (a) the reduced solution of the reduction step with (b) the oxidized solution of the oxidation step; while maintaining the substantially oxygen-free conditions, and thereby forming the aqueous leaching solution; and, (5) recovering the precipitated metallic copper.

3,692,648

PROCESS FOR OXYGENATING BLOOD AND APPARATUS FOR CARRYING OUT SAME

Jack M. Matloff, Los Angeles, Calif., and Robert A. Sanford, Marblehead, Mass., assignors to Meditech Energy and Environmental Corporation, Inc., Danvers, Mass.

Filed Mar. 24, 1970, Ser. No. 22,408
Int. Cl. C01b *13/04;* B01k *1/00*
U.S. Cl. 204—129 16 Claims



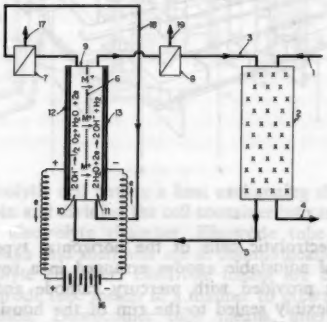
A blood oxygenating device comprising an oxygen-generating electrode in a blood-oxygenating compartment and carbon dioxide-permeable windows for removing carbon dioxide from the blood being oxygenated therein.

3,692,649

PROCESS FOR REMOVING CARBON DIOXIDE FROM GASES

Michel Prigent, 49 Rue du Lieutenant Colonel de Montbrison, 92 Rueil-Malmaison, France, and Claude Dezael, 50 Avenue Egle, Residence Egle, 78 Maisons-Lafitte, France

Filed Nov. 7, 1969, Ser. No. 874,921
Int. Cl. C01b *13/04;* C01d *7/34;* H01m *27/28*
U.S. Cl. 204—129 9 Claims



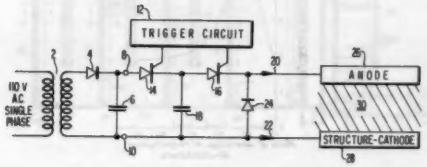
A process for producing oxygen and extracting carbon dioxide from a gas or gaseous mixture by extraction with a basic solution, evolving the carbon dioxide and oxygen in the anode compartment of an electrolytic cell, and passing the depleted base to the cathode compartment of the cell for regeneration.

3,692,650

CATHODIC PROTECTION SYSTEM

Harry J. Kipps, South Laguna Beach, and Thaddeus M. Doniguian, Laguna Beach, Calif., assignors to Signal Oil and Gas Company, Los Angeles, Calif.

Filed Aug. 24, 1970, Ser. No. 66,239
Int. Cl. C23f *13/00*
U.S. Cl. 204—147 10 Claims



A method and apparatus for cathodic protection of structures, such as well casing and pipe lines by the use of a pulsed voltage and continuous current. The width of the voltage pulses is sufficiently wide to permit acid ion conversion but not wide enough to permit undesirable chemical reactions. The pulse repetition frequency is made equal to the resonant frequency of the series circuit formed by the protected structure which acts as a cathode, the medium in which the structure is located, and an anode placed in the medium. The series circuit includes an inherent inductance between the anode and cathode and an inherent series capacitance known as the taffel double layer capacitance. By operating at the resonant frequency, maximum cathodic protection power is derived for a given input power. Further, the inductance between the anode and cathode causes a continuous current to flow after each voltage pulse has terminated.

3,692,651

PROCESS FOR PREPARING CIS 5-FLUORO-2-METHYL - 1 - (p-METHYLSULFINYLBENZYLIDENE)-3-INDENYL ACETIC ACID

Meyer Sletzinger, 135 Rockview Ave., North Plainfield, N.J. 07060; Ronald Harmetz, Willow Drive, R.D. 3, Dover, N.J. 07801; and Donald F. Reinhold, 564 Parkview Ave., North Plainfield, N.J. 07060

No Drawing. Filed May 1, 1970, Ser. No. 33,975
Int. Cl. C07c *147/14*
U.S. Cl. 204—158 R 2 Claims

Isomerization of trans 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid to its cis isomer.

3,692,652

PHOTOSYNTHESIS OF KETONES FROM ORGANOMERCURY COMPOUNDS AND CARBON MONOXIDE

Dietmar Seyferth, Lexington, Mass., and Ralph J. Spohn, Scotch Plains, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,178
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 6 Claims

Diarylmercury compounds in THF solutions react with carbon monoxide in the presence of dicobalt octacarbonyl and ultraviolet light to produce diaryl ketones.

3,692,653

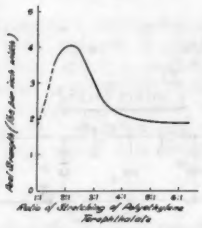
SHAPED ARTICLES HAVING ENHANCED SURFACE BONDING AND ADHESION PROPERTIES AND IMPROVED ELONGATION CHARACTERISTICS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, N.J., assignors to Johnson & Johnson

Filed Oct. 14, 1969, Ser. No. 866,221

Int. Cl. C08f 47/22, 3/08

U.S. Cl. 204—165 3 Claims



Films, sheets, filaments, fibrous webs, and similar synthetic, organic, polymeric shaped articles having enhanced surface bonding and adhesion properties, excellent ink-printability with improved elongation characteristics which are obtained by exposing said shaped articles and structures, while in partially stretched or drawn and partially oriented form, to the action of an electrical corona discharge in an atmosphere containing a reactive gas.

3,692,654

ELECTROPHORETIC PROCESS

Per Just Svendsen, Glostrup, Denmark, assignor to LKB-Produkter AB, Bromma, Sweden

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,204

Claims priority, application Sweden, Apr. 8, 1970, 4,779/70

Int. Cl. B01k 5/00

U.S. Cl. 204—180 R 6 Claims

An electrophoretic process for separating electrically charged components in a solution includes the steps of adding a mixture of ampholytes with different mobility and different isoelectric points to the components to be separated, and applying an electric field to the mixture of ampholytes and components to be separated to form a migrating pH-gradient and a migrating mobility gradient so that the desired components will be separated by the different ampholytes.

3,692,655

METHOD OF RADIOFREQUENCY SPUTTER ETCHING

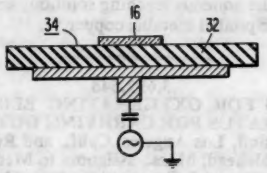
John Louis Vossen, Jr., Bedminster, N.J., assignor to RCA Corporation

Filed Apr. 5, 1971, Ser. No. 131,387

Int. Cl. C23c 15/00

U.S. Cl. 204—192 5 Claims

A method for radiofrequency sputter etching a pattern defined by an organic photoresist mask on a surface of a material from which there are dissociated, under the conditions of sputter etching, elements or complexes which are reactive with organic photoresist. The method



includes back-scattering of a relatively inert material to the photoresist to reduce degradation of the photoresist by the reactive elements or complexes.

3,692,656

Patent Not Issued For This Number

3,692,657

Patent Not Issued For This Number

3,692,658

CURRENT SUPPLY FOR ELECTROLYSIS CELLS

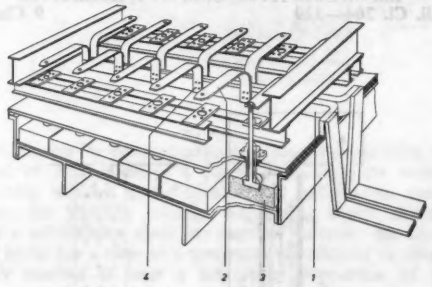
Luciano Mose, Dortmund, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

Filed May 14, 1969, Ser. No. 824,655

Claims priority, application Germany, May 17, 1968, P 17 71 393.8

Int. Cl. B01k 3/00; C22d 1/04

U.S. Cl. 204—219 2 Claims

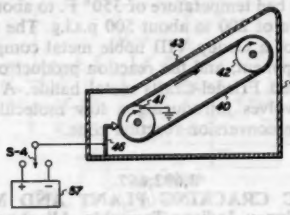


In electrolytic cells of the horizontal type having a series of adjustable anodes arranged in a row within a housing provided with mercury cathode and having a cover flexibly sealed to the rim of the housing, electric current is delivered to the anodes by a strip of copper or the like which extends in the direction of the connection line between the anode axes and is arranged above the cover through which the anode rods connected to the strip project.

3,692,659
ELECTROLYTIC REVERSIBLE COLOR DISPLAY DEVICE

Harold D. Lees, Henrietta, Paul F. Evans, Pittsford, Martin S. Maltz, Rochester, and Edward W. Vipond, Rush, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1970, Ser. No. 67,731
Int. Cl. C23b *5/68*
U.S. Cl. 204—224 1 Claim

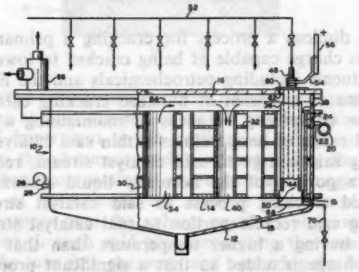


A reversible color display device utilizing a porous member impregnated with an electrolytic indicator having a pH range very near the pH at which the indicator undergoes a color change. The impregnated porous member is placed between a pair of electrodes one of which may be a writing electrode such as a stylus and the other a backing electrode. Upon the application of current to this structure color marks are made on the porous member. The color change is reversible by applying a current of the opposite polarity to the device.

3,692,660
ELECTROLYTIC CELL

Robert B. MacMullin, Niagara Falls, N.Y.; and Homer M. Fox, Forrest N. Ruehlen, and William V. Childs, Bartlesville, Okla. (all % Phillips Petroleum Company, Bartlesville, Okla. 74003)

Filed Sept. 25, 1970, Ser. No. 75,316
Int. Cl. B01k *3/00*
U.S. Cl. 204—246 12 Claims

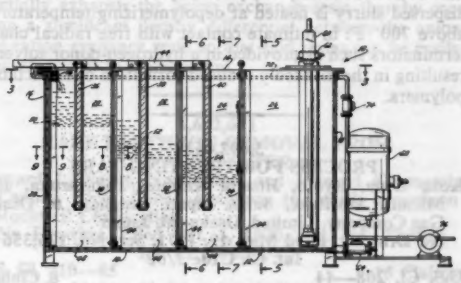


An electrolytic cell having a heat exchanging shell disposed therein and dividing the cell container into an upper and lower electrolyte chamber. Electrode tube means extend through said shell and are in communication with said electrolyte chamber. Electrode means are disposed in said electrode tube means in a manner to preserve said communication. Downcomer tube means, interspersed among said electrode tube means, also extend through the shell into communication with said electrolyte chamber. Baffle arrangements in said shell, and arrangements of said electrode tube means and said downcomer tubes, improve the efficiency of the cell.

3,692,661
APPARATUS FOR REMOVING POLLUTANTS AND IONS FROM LIQUIDS

Joe H. Shockcor, Guilford, Conn., assignor to Resource Control, Inc., West Haven, Conn.

Filed Sept. 17, 1969, Ser. No. 858,758
Int. Cl. C02b *1/82*; B01d *43/00*
U.S. Cl. 204—269 9 Claims

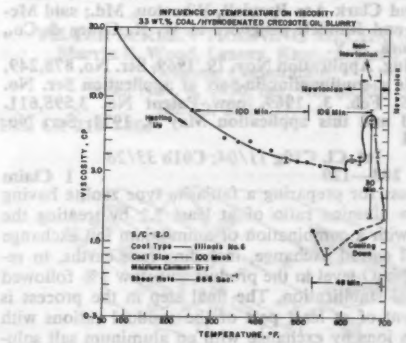


Apparatus and method for electrochemically removing ions and other contaminants from aqueous liquids by passing the liquid to be treated into a treatment vessel wherein a plurality of cathodes and anodes are positioned to form a number of treatment cells. The cathodes and anodes are connected to a source of direct current and a bed comprising a multitude of solid elements forming a medium of low electrical conductivity is placed about the cathodes and anodes. The cathodes and anodes are positioned so that they form a circuitous path for the liquid being treated as it passes through the bed while flowing through the vessel.

3,692,662
COAL LIQUEFACTION AT STAGED TEMPERATURES

Edward L. Wilson and Robert E. Pennington, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Oct. 9, 1970, Ser. No. 79,609
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 9 Claims



In the solvent liquefaction of slurried caking-type coal solids at elevated depolymerizing temperatures above 700°

F., the formation of unconvertible coal residues is reduced by first forming a substantially complete dispersion of the coal in the solvent before exposing the coal to depolymerizing temperatures. For example, the slurry is first maintained at temperatures within the range from about 500° F. to about 700° F. while being agitated until the viscosity of the slurry, after having increased to a maximum, falls from the maximum to a viscosity within a predetermined range lower than the maximum which indicates the formation of a substantially complete dispersion. Thereafter, the dispersed slurry is heated at depolymerizing temperatures above 700° F. in intimate contact with free radical chain terminators such as provided in a hydrogen-donor solvent, resulting in the markedly reduced formation of intractable polymers.

3,692,663

PROCESS FOR TREATING TARS

Koza Ueda, Kyoto, Jitsumi Kimoto, Takarazuka, and Mitsuru Moritake, Suita, Japan, assignors to Osaka Gas Company, Limited, Osaka-shi, Japan

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,356

Int. Cl. C10c *3/02*

U.S. Cl. 208—44 **8 Claims**

The process for treating tars of this invention comprises steps of (1) heating a starting tar to a temperature of 320 to 470° C. under increased pressure of 1 to 20 kg./cm.^{2} gauge to produce gas, oil and pitch, (2) separating oil and pitch by distillation to produce pitch having a softening point of at least 60° C. and containing 20 to 45% by weight of benzene-insoluble content and 3 to 20% by weight of quinoline-insoluble content, (3) heating the resulting oil under increased pressure of 3 to 35 kg./cm.^{2} gauge at a temperature ranging from 370 to 540° C. and at least 10° C. higher than the heating temperature in the first step to produce gas, oil and pitch, and (4) separating oil and pitch by distillation to produce pitch having a softening point of at least 60° C. and containing 15 to 40% by weight of benzene-insoluble content and not more than 2% by weight of quinoline-insoluble content.

3,692,664

Patent Not Issued For This Number

3,692,665

CATALYTIC CRACKING WITH CATALYST OF HIGH-ACTIVITY ZEOLITE STABILIZED BY CATION AND THERMAL STABILIZATION

Carl V. McDaniel, Laurel, Richard William Baker, Ellicott City, and Clark Ace Rundell, Wheaton, Md.; said McDaniel and Rundell assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application Nov. 19, 1969, Ser. No. 878,249, which is a continuation-in-part of application Ser. No. 796,215, Feb. 3, 1969, now Patent No. 3,595,611. Divided and this application May 3, 1971, Ser. No. 139,811

Int. Cl. C10g *11/04*; C01b *33/28*

U.S. Cl. 208—120 **1 Claim**

A process for preparing a faujasite type zeolite having a silica to alumina ratio of at least 3.2 by treating the faujasite with a combination of ammonium ion exchange and metal cation exchange, including rare earths, to reduce the Na_2O level in the product to below 3% followed by thermal stabilization. The final step in the process is replacement of at least part of the residual cations with aluminum ions by exchange with an aluminum salt solution. The resulting zeolite is characterized by high surface area, exceptional catalytic activity and a favorable catalytic selectivity. The zeolite has exceptionally high activity and selectivity when used as a component in a hydrocarbon cracking catalyst.

3,692,666

LOW PRESSURE, LOW SEVERITY HYDROCRACKING PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 823,521, May 9, 1969. This application Sept. 21, 1970, Ser. No. 74,236

Int. Cl. C10g *13/02, 23/02, 37/00*

U.S. Cl. 208—112 **3 Claims**

A catalytic process for converting a hydrocarbonaceous charge stock at a low operating severity including a maximum catalyst bed temperature of 350° F. to about 650° F. and a pressure of 200 to about 500 p.s.i.g. The catalyst is a composite of a Group VIII noble metal component, or a nickel component, and the reaction product of alumina and a sublimed Friedel-Crafts metal halide. A preferred technique involves introducing a low molecular weight olefin into the conversion reaction zone.

3,692,667

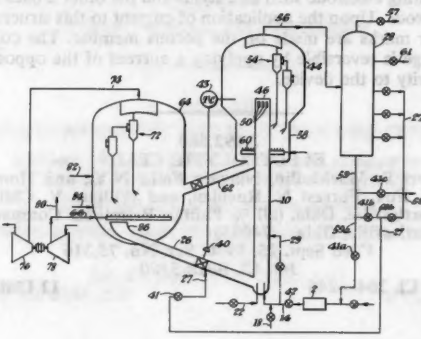
CATALYTIC CRACKING PLANT AND METHOD

Joel D. McKinney, Indiana Township, Allegheny County, and George F. Ondish, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 12, 1969, Ser. No. 875,829

Int. Cl. C10g *11/18*

U.S. Cl. 208—120 **35 Claims**



We disclose a process for cracking a primary hydrocarbon charge capable of being cracked to lower boiling constituents including petrochemicals and the like in the presence of a stream of fluidized cracking catalyst, said process comprising the steps of maintaining a predetermined range of temperatures within said catalyst stream, adding said charge to said catalyst stream, recycling at least a portion of the normally liquid effluent product of said cracking process to said catalyst stream, and adding said recycle portion to said catalyst stream at a point having a higher temperature than that at which said charge is added so that a significant proportion of said recycle effluent is cracked by said catalyst.

3,692,668

PROCESS FOR RECOVERY OF OIL FROM REFINERY SLUDGES

Drew E. McCoy, Richmond, William N. Gilmer, Chesterfield, and Edward C. Johnson, Richmond, Va., assignors to Texaco Inc., New York, N.Y.

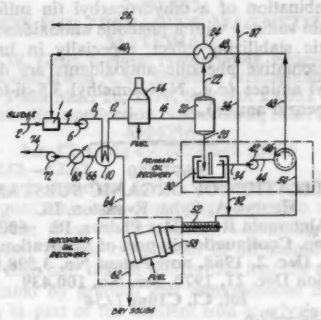
Filed Mar. 3, 1971, Ser. No. 120,521

Int. Cl. B01d *12/00*

U.S. Cl. 210—18 **8 Claims**

In the first stage of a continuous process refinery sludges are mixed and diluted with oil, such as recycle oil derived from the process, to improve the handling characteristics of the sludge, heated to a temperature of about

220° to 300° F. at a pressure of from about 15 to about 25 p.s.i.a. to separate the sludge into a water vapor phase and an oil-sludge slurry phase. The water vapor is condensed to yield water with a reduced Chemical Oxygen Demand which, in most instances, can be discharged in receiving bodies of water without polluting the same, or can, if required, be further treated before discharge from the process, while most of the oil from oil-sludge slurry



phase is separated therefrom by, for example, centrifugation. In the second phase of the process, the concentrated sludge from the centrifugation step is heated at a temperature of about 400° to 800° F. and a pressure of about 1 to about 20 p.s.i.a. to remove by vaporization the remaining oil which is collected and condensed thus yielding dry, oil-free, free-flowing solids useful for a wide variety of applications, such as for land fill.

3,692,669

METHOD AND APPARATUS FOR MICRO DRY COLUMN CHROMATOGRAPHY

Albert J. Bauman, Sierra Madre, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Aug. 10, 1970, Ser. No. 62,366
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 **13 Claims**

Micro-sized dry chromatographic columns are prepared by plugging at least one end of a glass capillary tube with a material impervious to the particles of adsorbent but, pervious to the chromatographic solvent, filling the tube with adsorbent, compacting the adsorbent and plugging the other end of the column. An analysis is conducted by imbibing sample onto the solvent pervious plug, solvent development through said plug, separating the bands by breaking the tube into segments and analyzing the bands.

3,692,670

TREATMENT OF CATION AND ANION EXCHANGE RESINS WITH SODIUM SULFITE

William C. Burns, Fullerton, and Donald Robinson, Arcadia, Calif., and Sidney H. Newberry, Caledonia, Ill., assignors to Water Treatment Corporation, City of Industry, Calif.

No Drawing. Continuation of application Ser. No. 775,529, Nov. 13, 1968. This application Dec. 29, 1969, Ser. No. 888,146
Int. Cl. B01d *15/06*
U.S. Cl. 210—32 **4 Claims**

A method for purifying, reconditioning and separating mixtures of cation exchange resins and anion exchange resins which are contaminated with solid particles of ferric oxide and other metal oxides such as cupric oxide by contacting said mixture of exchange resins with a reducing agent which will reduce the ferric oxide to the ferrous state and form a water soluble ferrous salt and, if necessary, reduce the cupric oxide to the corresponding water soluble cuprous salt thereby easily removing said oxides. At the same time, the cation of the reducing agent as well as the ferrous ion substantially exhausts the cation exchange resin while the anion of the reducing agent substantially exhausts the anion exchange resin thereby creating a significant density differential between the anion and cation exchange resin so that said resins can be easily separated prior to regeneration.

3,692,671

RARE EARTH ION REMOVAL FROM WASTE WATER

Howard L. Recht, Northridge, and Masood Ghassemi, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,390
Int. Cl. C02c *1/40*
U.S. Cl. 210—45 **15 Claims**

A method is provided for chemically removing trivalent rare earth ions from waste water by treating the trivalent rare earth ion-containing water with a carbonate salt, such as an alkali metal carbonate, to form an insoluble rare earth carbonate precipitate and then separating the precipitate from the water. The rare earth ions may be regenerated in the form of a soluble rare earth salt, for example, by treating the separated rare earth carbonate precipitate with acid, such as hydrochloric or sulfuric acid.

3,692,672

Patent Not Issued For This Number

3,692,673

WATER-SOLUBLE SULFONATE POLYMERS AS FLOCCULANTS

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,085
Int. Cl. B01d *21/01*
U.S. Cl. 210—52 **13 Claims**

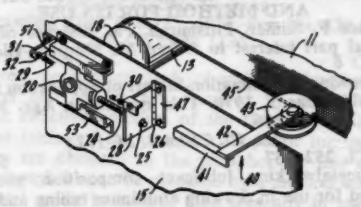
Polymers of acrylamido sulfonic acids and their salts, especially 2-acrylamido-2-methylpropanesulfonic acid and its salts, are useful as flocculants for aqueous systems, especially in combination with inorganic co-flocculants.

3,692,674

FILTER SCREEN TRAINING MECHANISM

Marvin E. Wood, Lenexa, Kans., assignor to Ecodyne Corporation

Filed Nov. 4, 1970, Ser. No. 86,820
Int. Cl. B01d *33/14*
U.S. Cl. 210—401 **4 Claims**



An improved belt training mechanism having an endless belt maintained under tension between a pair of

rollers, by means of which one of the rollers over which the filter screen travels may be skewed, to correct the alignment of the belt. The invention includes a single guide means to feel the movement of an edge of the filter screen and align the belt accordingly. Spring means are provided to reduce the force applied to the edge of the belt by the guide means.

3,692,675

INHIBITOR TO CORROSIVE ATTACK AND METHOD OF USE

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 36,464, May 11, 1970. This application Nov. 4, 1970, Ser. No. 86,951

Int. Cl. C23f *11/12, 11/14*

U.S. Cl. 252—8.55 E **16 Claims**

A composition of matter which is useful for protecting metal exposed to a corrosive environment and use thereof in the treatment of metal parts, e.g. located in well bores, equipment, etc., is disclosed and claimed. The composition contains as an essential constituent an acid salt of the reaction product of (a) a fatty or resin acid, (b) a polymerized higher fatty acid, (c) a partial ester formed by reacting a polyhydric alcohol with a polymerized higher fatty acid and (d) aminoethyl ethanolamine.

3,692,676

METHOD OF FRICTION LOSS REDUCTION IN OLEAGINOUS FLUIDS FLOWING THROUGH CONDUITS

John D. Culter, Rolla, Mo., and Gifford G. McClaflin, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,375

Int. Cl. E21b *43/25*

U.S. Cl. 252—8.55 R **3 Claims**

A method of reducing the friction loss normally occurring when oleaginous fluids flow through conduits by adding to the oleaginous fluid a minor amount of a very high molecular weight polyolefin.

3,692,677

GREASES THICKENED WITH QUINACRIDONE PIGMENTS

Garth M. Stanton, San Anselmo, and John L. Dreher, Kensington, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 18, 1970, Ser. No. 38,549

Int. Cl. C10m *5/02, 5/20*

U.S. Cl. 252—25 **9 Claims**

A composition comprising greases thickened with substituted or unsubstituted quinacridone pigments.

3,692,678

METALWORKING LUBRICANT COMPOSITION AND METHOD FOR ITS USE

Torrence F. Stiffler, Pittsburgh, Pa., assignor of a fractional part interest to Alfred M. Murphy, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 42,473, June 1, 1970. This application Apr. 30, 1971, Ser. No. 139,206

Int. Cl. C10m *1/24, 1/26*

U.S. Cl. 252—37 **5 Claims**

A metalworking lubricant composition particularly adapted for use in drawing aluminum tubing and the like and containing as essential constituents sulfur-free degras, aluminum stearate, castor oil wax and a chlorohydrocarbon solvent.

3,692,679

STABILIZED ORGANIC MATERIAL

James D. O'Neill, Southfield, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Application Mar. 10, 1969, Ser. No. 805,808, which is a continuation-in-part of application Ser. No. 603,716, Dec. 22, 1966. Divided and this application June 18, 1970, Ser. No. 47,557

Int. Cl. C10m *1/54*

U.S. Cl. 252—46.4 **2 Claims**

The combination of a dihydrocarbyl tin sulfide (e.g., di-n-butyl tin sulfide) with a phenolic antioxidant exhibits a synergistic stabilizing effect, especially in lubricating oils. Representative phenolic antioxidants are dialkylhydroxybenzyl amines (e.g., N,N-dimethyl 3,5-di-tert-butyl-4-hydroxybenzyl amine).

3,692,680

STABILIZATION OF ORGANIC SUBSTANCES

Henryk A. Cyba, Evanston, Ill. (30 Algonquin Road, Des Plaines, Ill. 60016)

No Drawing. Continuation-in-part of application Ser. No. 780,601, Dec. 2, 1968, now Patent No. 3,598,855. This application Dec. 21, 1970, Ser. No. 100,439

Int. Cl. C10m *1/54*

U.S. Cl. 252—49.6 **9 Claims**

Stabilization of organic substance by incorporating therein a stabilizing concentration of a cyclic borate of polymeric alkanolamine. One example is the stabilization of plastics and another example is the stabilization of hydrocarbon distillates.

3,692,681

DISPERSION OF TEREPHTHALIC ACID IN DETERGENT CONTAINING HYDROCARBON OIL MEDIUM

Thomas V. Liston, Kentfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,614

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 A **4 Claims**

Terephthalic acid is dispersed in a hydrocarbon medium containing highly hindered acylated alkylene polyamines.

3,692,682

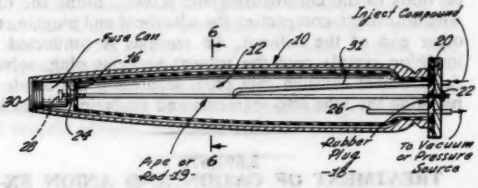
HEAT BARRIER MATERIAL AND PROCESS

Carlo Ré, Glendale, Earl O. Conrad, Santa Ana, and Jack R. Conrad, Costa Mesa, Calif., assignors to Dyna-Shield, Inc., Santa Ana, Calif.

Filed Dec. 18, 1969, Ser. No. 886,075

Int. Cl. C04b *43/00*; C09k *3/28*; E04b *1/94*

U.S. Cl. 252—62 **2 Claims**



An improved material is provided which serves as a protective heat barrier for explosives, or other combustible products, and which may be applied, for example, as a paste or a liquid, to the external or internal surface of the casing containing the explosive, to create a hard coating for the casing of extremely low heat transfer characteristics and low heat rate transfer characteristics. Although the coating will be described herein in such an environment, it will be evident as the description proceeds,

that it may be used in any application in which a heat barrier is required for protective, or other purposes. The material is composed of a mixture of water-extended polyester (WEP) and particles of a heat proofing material, such as powdered or fibrous asbestos, or powdered glass. An improved process and apparatus for applying the material is also provided.

3,692,683
PROCESS FOR PREPARING MAGNETIZABLE MATERIAL
John W. Geus, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
Filed Mar. 26, 1970, Ser. No. 23,032
Claims priority, application Netherlands, Mar. 28, 1969, 6904796
Int. Cl. C10g *49/08*; C04b *35/26*
U.S. Cl. 252—62.62 8 Claims

A process is described for the preparation of a permanently magnetizable iron-containing particulate metal material wherein from a ferrous ion containing solution, wherein other metals are present in an atomic quantity not larger than half that of the ferrous ion, the metals are co-precipitated by gradual and homogeneous conversion of at least ⅔ part of the bivalent iron to trivalent iron to a pH between 2 and 6.5 and under controlled temperature conditions, and said conversion is controlled to proceed at a rate no greater than at most 0.3 gram atoms per liter of solution per hour. The precipitate is subsequently separated from the solution and washed and dried.

3,692,684
DETERGENT
Gerhard Oskar Hentschel, Goteborg, Sweden, assignor to Valter Sven Erwin Hentschel, Goteborg, Sweden
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,425
Claims priority, application Switzerland, Oct. 1, 1969, 13,492/69
Int. Cl. C11d *3/20*
U.S. Cl. 252—89 3 Claims

A detergent containing alkaline salts of organic, aliphatic and/or aromatic carboxylic acids and/or anhydrides of the same with one or several carboxylic groups. These salts replace in the detergent previously used phosphates which caused a eutrophication and endangered the ecology.

3,692,685
DETERGENT COMPOSITIONS
Vincent Lamberti, Upper Saddle River, and Mark D. Konort, Haworth, N.J., and Ira Weil, New York, N.Y., assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 879,627, Nov. 24, 1969, which is a continuation-in-part of application Ser. No. 731,700, May 24, 1968. This application Oct. 12, 1970, Ser. No. 80,166
Int. Cl. C11d *3/20, 7/26*
U.S. Cl. 252—89 5 Claims

There are disclosed herein detergent compositions containing a water-soluble organic detergent compound and as a builder therefor the normal alkali metal, ammonium or alkanol amine salts of carboxymethyloxysuccinic acid.

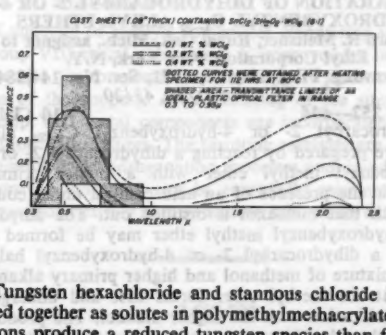
3,692,686
NOVEL NON-FLAMMABLE AZEOTROPE SOLVENT COMPOSITION
Oliver A. Barton, Florham Park, N.J., and Kevin P. Murphy, Orchard Park, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 1, 1970, Ser. No. 77,388
Int. Cl. C09d *9/00*; C11d *7/50*; C23g *5/02*
U.S. Cl. 252—171 10 Claims

Tetrachlorodifluoroethane (sym.-, asym.-, and mixtures thereof) nitromethane, water and isopropanol or secondary butanol form quaternary azeotropic mixtures which are useful as dry cleaning solvents and are particularly useful for the removal of hard-to-remove stains from leather.

3,692,687
PROCESS FOR STABILIZING HYDROX COMPOSITIONS CONTAINING MAGNESIUM OXIDES
Allen A. Duswalt, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.
Filed June 4, 1971, Ser. No. 149,979
Int. Cl. C06b *19/06*; C06d *5/06*
U.S. Cl. 252—184 13 Claims

Gas generating compositions having improved stability are prepared from alkali or alkaline earth metal nitrites, ammonium salts and magnesium oxide. The components are predried before mixing. The metal nitrites and ammonium salts must be predried separately. The predried magnesium oxide is admixed with either the alkali or alkaline earth metal nitrite or ammonium salt prior to admixing with the remaining unmixed component. The calculated water content of the final admixture must be less than 0.0015% by weight.

3,692,688
PLASTIC OPTICAL FILTER
George Augustus Castellion, Stamford, Conn., and Joseph Peter Habermann, North Salem, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed June 1, 1971, Ser. No. 148,662
Int. Cl. F21v *9/02*; G02f *5/20*
U.S. Cl. 252—300 3 Claims



Tungsten hexachloride and stannous chloride incorporated together as solutes in polymethylmethacrylate formulations produce a reduced tungsten species than filters infrared effectively while maintaining visible light transmittance. Plastic optical filters are made with the described composition.

3,692,689
PHOSPHOR COMPRISING LANTHANUM CERIUM THORIUM PHOSPHATE
Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company
No Drawing. Filed Mar. 25, 1971, Ser. No. 128,187
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.1 L 8 Claims

Improved cerium-activated phosphate phosphors of lanthanum and cerium are provided by incorporating small but effective amounts of the thorium ion in the crystalline lattice of the phosphor. Superior luminescent properties are obtained in the phosphor by this means and the phosphors can be prepared by a method which is simpler and easier to control than presently in use. The improved phosphors are useful in cathode-ray tubes, lamps, X-ray image intensifier tubes and other applications.

3,692,690

ENCAPSULATION PROCESS BY COMPLEX COACERVATION USING POLYMERS AND CAPSULE PRODUCT THEREFROM

Georg Horger, Steppach, Germany, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed May 27, 1970, Ser. No. 41,111
Int. Cl. A61k *9/04*; B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 5 Claims

A process is disclosed for manufacturing capsules, en masse, by use of a liquid-liquid phase separation which includes polysilicate inorganic material as a complexing, phase-separation-inducing, polymer. The disclosed process is conducted in an aqueous capsule manufacturing vehicle and the material which emerges as a liquid phase is an aqueous solution of organic hydrophilic polymeric material and inorganic polysilicate material. The liquid-liquid phase separation of this invention is the type generally named "complex" coacervation wherein the separated, emergent, liquid phase includes a major portion of both, the organic hydrophilic polymeric material and the phase-separation-inducing material;—in this invention, polysilicate polymeric material. The organic polymeric material and the inorganic polymeric material are complexed together by virtue of opposite electrical charges, the complex is least partially immiscible with the manufacturing vehicle, and the manufacturing vehicle contains only a minor amount of either polymeric material. Preferred materials for use in practicing the present invention include gelatin as the organic hydrophilic polymeric material and polysilicates as the inorganic polymeric phase-separation-inducing material.

3,692,691

PREPARATION OF DIHYDROCARBYL 2- OR 4-HYDROXYBENZYL C_{4-30} ALKYL ETHERS

Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed May 17, 1971, Ser. No. 144,284
Int. Cl. C07c *41/10*, *43/20*
U.S. Cl. 252—404 10 Claims

Dihydrocarbyl 2- or 4-hydroxybenzyl C_{4-30} alkyl ethers are prepared by reacting a dihydrocarbyl 2- or 4-hydroxybenzyl methyl ether with a higher primary alkanol in the presence of an acid catalyst under conditions such that methanol is distilled out. The dihydrocarbyl hydroxybenzyl methyl ether may be formed by reacting a dihydrocarbyl 2- or 4-hydroxybenzyl halide with a mixture of methanol and higher primary alkanols such that the methyl ether forms first and undergoes transetherification with the higher alkanol. The products are useful antioxidants.

3,692,692

REJUVENATION OF DAMAGED ZEOLITE-SUPPORTED METAL CATALYSTS

John W. Ward, La Habra, and Danford E. Clark, Fountain Valley, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,241
Int. Cl. B01j *11/18*, *11/08*, *11/30*
U.S. Cl. 252—412 12 Claims

Siliceous zeolite catalysts comprising zeolitic mono- and/or divalent metal cations and a non-zeolitic Group VIII metal hydrogenating component supported thereon, which catalysts have undergone damage by thermal and/or hydrothermal stresses resulting in a maldistribution of the metal components, are rejuvenated in activity by a sequential treatment with an aqueous ammonium salt to exchange out at least a portion of the zeolitic mono- and/or divalent metal ions, and with aqueous ammonia to effect a redistribution of the Group VIII metal. The treatments may be performed in either order.

3,692,693

DESULFATION OF REFORMING CATALYSTS

Harry E. Gunning, Edmonton, Alberta, and Bruce G. Jameson and Jackson Eng, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Co.

No Drawing. Filed Oct. 15, 1970, Ser. No. 81,153
Int. Cl. B01j *11/74*, *11/18*, *11/30*
U.S. Cl. 252—415 12 Claims

A process for the regeneration of sulfur deactivated catalysts by contact, or reaction, of the said catalyst with methane. A catalyst, or catalyst composite, which has been poisoned, and thereby deactivated, by contact with sulfur in sufficient concentration and exposed to oxygen to form the sulfate, can be regenerated by contact with methane. Such catalyst regeneration technique finds particular utility in semiregenerative type reforming processes. Reforming catalysts, particularly catalyst composites which contain alumina, e.g. noble metal on an alumina base such as platinum-on-alumina, which has been deactivated by sulfur compounds can be regenerated by contact with methane at temperatures ranging generally from about 700° F. to about 1050° F., and at pressures ranging from about 15 p.s.i. to about 300 p.s.i.

3,692,694

CATALYST FOR HYDROCARBON CONVERSION

Stanley Kravitz, Wiccopee, and John H. Estes and Robert M. Suggit, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,896
Int. Cl. B01j *11/78*
U.S. Cl. 252—439 16 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising carbon monoxide and sulfuryl fluoride or thionyl fluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,695

FLUORIDED COMPOSITE ALUMINA CATALYSTS

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,897
Int. Cl. B01j *11/78*
U.S. Cl. 252—439 14 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising hydrogen and sulfur hexafluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,696

CATALYST FOR HYDROCARBON CONVERSION

Stanley Kravitz, Wiccopee, and John H. Estes and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,898
Int. Cl. B01j *11/78*
U.S. Cl. 252—439 14 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising carbon monoxide and

sulfur hexafluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,697

FLUORIDED METAL-ALUMINA CATALYSTS

Stanley Kravitz, Wiccopee, and John H. Estes and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,899

Int. Cl. B01j *11/78*

U.S. Cl. 252—439 16 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI–B, VII–B or VIII metal or compound and contacting the composite with an activator system comprising hydrogen and sulfuryl fluoride or thionyl fluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,698

HYDROPROCESSING CATALYST

Kenneth L. Riley and Willard H. Sawyer, Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Dec. 28, 1970, Ser. No. 101,956

Int. Cl. B01j *11/74, 11/40*

U.S. Cl. 252—439 10 Claims

A hydroprocessing catalyst having preferred surface area and pore volume ranges located in pores having diameters ranging from 30–80 A. and greater than 2000 A. Pore volume in the 200–2000 A. diameter range is kept to a minimum. The catalyst is a mixture of Group VI–B and Group VIII metal oxides or sulfides on an alumina support. The catalyst shows exceptional activity maintenance in hydrodesulfurization of heavy hydrocarbon feed stocks containing asphaltenes. Pore volume and surface area is obtained in the desired ranges by forming the composite support from certain size ranges of particle-form support material.

3,692,699

$V_2O_5/TiO_2/K_2SO_4$ CATALYST SUITABLE FOR PREPARATION OF PHTHALIC ANHYDRIDE

Shiro Hojo, Niigata-shi, and Kuniko Komiya, Kurashiki-shi, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,515

Claims priority, application Japan, Mar. 13, 1967, 42/15,757

Int. Cl. B01j *11/82*

U.S. Cl. 252—440 6 Claims

A catalyst for the preparation of phthalic anhydride which comprises vanadium pentoxide, titanium oxide and potassium sulfate and a process for preparing phthalic anhydride by the use of said catalyst. The molar ratio of $V_2O_5/TiO_2/K_2SO_4$ is 1/0.1–5/0.01–0.2.

3,692,700

PROCESS AND COMPOSITIONS FOR CRACKING HYDROCARBON FEEDS

Willard H. Sawyer and Harry E. Robson, Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Aug. 31, 1970, Ser. No. 68,213

Int. Cl. B01j *11/40, 11/32*

U.S. Cl. 252—455 R 4 Claims

A process, and compositions of matter, for cracking hydrocarbon feeds, e.g., at temperatures ranging from about 400° C.–650° C. The feeds are cracked at cracking conditions by contact with catalysts selected from the groups consisting of (a) magnesium chrysotile and (b) magnesium chrysotile, nickel chrysotile and cobalt chrysotile substituted by certain selected concentrations of aluminum. Flake forms of chrysotile are preferred, especially those of surface areas ranging from about 250 $m.^2/g.$–500 $m.^2/g.$, and higher. Particularly useful catalysts are formed by incorporation of these materials in matrices which possess Bronsted acidity.

3,692,701

GROUP VIII METALS ON TIN-CONTAINING SUPPORTS DEHYDROGENATION CATALYSTS

E. O. Box, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 15, 1970, Ser. No. 55,213

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—466 B 6 Claims

Longevity of catalyst composites comprising supported Group VIII metal compounds is improved by incorporation of a tin compound into the support prior to calcination of the support. After calcining of the support, the Group VIII metal components are incorporated by conventional procedures. The resulting catalysts are especially useful in dehydrogenation processes and, in addition to improved longevity, can be repeatedly regenerated to a conversion activity commensurate with fresh catalysts.

3,692,702

SEMICONDUCTIVE CONTACT ADHESIVE

Anthony R. Lania, Watertown, and Neil Kirkegard, Jr., Randolph, Mass., assignors to Chase Corporation, Randolph, Mass.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,239

Int. Cl. H01b *1/06*

U.S. Cl. 252—511 15 Claims

A semiconducting contact adhesive comprising a vulcanizing agent, a vulcanizable polymer such as poly(2-chloro-1,3-butadiene), and a carbon black for imparting semiconducting properties thereto. The carbon black is advantageously of a high surface:absorptivity ratio. The adhesive is characterized by its excellent viscosity characteristics, excellent shelf life, very high initial strength, and high degree of surface-selectivity.

3,692,703

Patent Not Issued For This Number

3,692,704

METHOD OF LAUNDERING FABRICS

James K. Stamm, Erlanger, Ky., Edwin R. Loder, Cincinnati, Ohio, Charles A. Brungs, Fort Wright, Ky., and Herman Kerst, Des Plaines, Ill., assignors to Chemed Corporation, Cincinnati, Ohio

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,091

Int. Cl. C11d *3/065, 3/066*

U.S. Cl. 252—525 2 Claims

Method for improving the brightness of fabrics which comprises forming a solution of a built detergent composition in water having a hardness of from 0 to 5 grains per gallon, said detergent composition containing, as the builder component, 50% of a mixture consisting of 30% by weight sodium polyacrylate having a weight average molecular weight of 100,000 and 20% by weight of poly (N,N-dicarboxymethyl acrylamide) having a weight average molecular weight of 50,000, and laundering said articles in said laundering solution.

3,692,705

EPOXY PHTHALIMIDE RESINS

Herbert A. Newey, Lafayette, and Howard V. Holler, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,254

Int. Cl. C08g *30/00*

U.S. Cl. 260—2 EP 10 Claims

Novel epoxide-containing phthalimide resins are described having at least two epoxy groups per molecule, at least one of which is a glycidyl group attached to the nitrogen atom of a phthalimide structure or hydrogenated phthalimide structure. These resins may be cured with conventional epoxy curing agents to produce hard, flexible insoluble compositions.

3,692,706

FOAMED MATERIALS AND THEIR PREPARATION

Graham Arthur Iggiesden, Saffron Walden, England, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,494

Claims priority, application Great Britain, Feb. 6, 1970, 5,946/70; Sept. 10, 1970, 43,399/70

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 F 33 Claims

Phenol-formaldehyde resins containing a blowing agent are foamed and cured without the application of external heat by adding a liquid which reacts exothermically to form a polymer under the influence of the curing agent, a strong acid. Thus, a foam is prepared by mixing the phenol-formaldehyde resin with a liquid, exothermically-reacting substance, especially furfuryl alcohol, and a blowing agent, and then adding a strong acid such as toluene-p-sulphonic acid or phosphoric acid. Optionally, an emulsifying agent and an accelerator may be incorporated.

3,692,707

PREPOLYMERS AND FIRE RETARDANT POLYURETHANES THEREFROM

Ronnie M. Pruit and Howard D. Jones, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,242

Int. Cl. C08g *22/18, 22/48*

U.S. Cl. 260—2.5 AJ 11 Claims

Novel halogen or phosphorus-containing prepolymers are employed to prepare polyurethane compositions having improved fire retardant properties.

3,692,708

MICROPOROUS POLYURETHANE FILMS AND THEIR PRODUCTION

Ernst Meisert, Hellmut Striegler, Hans-Joachim Koch, and Wolfgang Klebert, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 14, 1970, Ser. No. 37,298

Claims priority, application Germany, May 21, 1969, P 19 25 997.3

Int. Cl. B29d *7/14, 27/00;* C08g *22/14*

U.S. Cl. 260—2.5 AY 8 Claims

Porous sheet structures and a process for producing them from thermoplastic elastomers are provided wherein about 100 parts by weight of a thermoplastic elastomer are processed in the presence of from about 60 to about 150 parts by weight of sodium-hydrogen carbonate and from about 3 to about 15 parts by weight of an aliphatic organic carboxylic acid having a molecular weight of from about 150 to about 5000 and an acid number of at least 2.5 on calenders, particularly heated calenders, and the films obtained are freed from salt by a subsequent rinsing process. The structures thus obtained are excellent leather substitutes.

3,692,709

Patent Not Issued For This Number

3,692,710

CELLULAR PLASTICS OF POLYMERS OF PERFLUOROLEFINS AND PROCESS FOR MAKING THEM

Otfried Lörcher, Burghausen (Salzach), and Robert Steffen, Burgkirchen an der Altz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 1, 1969, Ser. No. 828,070

Claims priority, application Germany, May 7, 1968, P 17 69 315.1

Int. Cl. C08f *29/16, 47/08*

U.S. Cl. 260—2.5 L 13 Claims

The present invention relates to cellular plastics of polymers of perfluorolefins and a process for making them by adding determined amounts of a hydroxyl substituted hydrocarbon containing at least three hydroxyl groups to the aqueous dispersion of the polymer and then whipping while introducing a gas and finally treating the stiff foam obtained at increasing temperatures. The cellular plastics have a unit weight within the range of from 70 to 1000 kg./m.^{3} and a heat resistance of up to 250° C.

3,692,711

RUBBER-POLYESTER COMPOSITIONS

David Crawford Eaton and Boris Nicholas Leyland, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,307

Claims priority, application Great Britain, Oct. 20, 1969, 51,364/69; Apr. 23, 1970, 19,559/70

Int. Cl. C08c *9/16;* C08d *9/10;* C08g *39/10*

U.S. Cl. 260—3 9 Claims

Compositions containing rubber in contact with polyester material, especially vulcanised composition, are sta-

bilised against thermal degradation of the polyester by incorporation of a halogen-substituted heterocyclic compound containing in one aromatic heterocyclic ring one or two groups of the formulae

—N=C(Halogen)— or =N—C(Halogen)=

The preferred compounds are 2-chloro-s-triazines having alkyl-substituted amino groups, or especially unsubstituted amino groups, in the 4- and 6-positions.

3,692,712

ALPHA-OLEFIN POLYMER COMPOSITION AND PROCESS FOR PREPARING SAME

Rosalie Brooks Crouch, % Imperial Chemical Industries Limited, Plastics Division, Bessemer Road, and Anthony David Caunt, 32 Digswell Road, both of Welwyn Garden City, Hertfordshire, England

No Drawing. Filed July 15, 1968, Ser. No. 744,656

Claims priority, application Great Britain, July 28, 1967, 34,836/67; Nov. 20, 1967, 52,710/67; June 14, 1968, 28,359/68

Int. Cl. C08f *1/56, 29/00, 29/06*
U.S. Cl. 260—878 R **12 Claims**

An olefine polymer composition comprising a blend of a crystalline olefine polymer or copolymer, for example 4-methyl pentene-1 or propylene, with a minor proportion of a cationic polymer, for example of 4-methyl pentene-1.

The polymer may be prepared in a single polymerisation process in which the polymerisation mechanism is changed during the polymer production, for example by initially polymerising with a Ziegler catalyst and then adding hydrogen chloride gas to change to a cationic polymerisation process.

3,692,713

LABELING ADHESIVE COMPOSITION

Peter Spiros Columbus, Whitestone, and Ronald Thomas Mason, New York, N.Y., assignors to Borden, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 477,293, Aug. 4, 1965. This application Dec. 23, 1969, Ser. No. 887,785

Int. Cl. C08f *15/16*
U.S. Cl. 260—17.4 ST **3 Claims**

This invention relates to an adhesive composition suitable for adhering cellulosic materials to plastics comprising (1) an interpolymer of vinyl acetate with a C_2 to C_{10} ester of an acid selected from the group consisting of fumaric, maleic, acrylic acids and mixtures thereof and 0 to 5% based on total weight of interpolymer of a monomer selected from the group consisting of ethenoid bond containing carboxylic acids, acid amides and mixtures thereof; (2) a starch component selected from the group consisting of waxy starches, hydroxyalkyl starch ethers, acid modified starches, oxidized starches and dextrines, and; (3) a water soluble rosin salt there being on a solids basis about two parts of interpolymer and rosin salt combined for each part of the starch component; and to laminates made with such adhesives.

3,692,714

AQUEOUS DISPERSION OF A COMPATIBILIZED REACTION PRODUCT FORMED BY HEAT REACTING A FATTY ACID ESTER ADDUCT WITH A POLYAMIDE

Jacobus M. Keyman, Kapel-Avezaath, Netherlands, and Arnold E. Maschke, Cologne, Germany, assignors to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,052

Claims priority, application Netherlands, Feb. 28, 1969, 6903222

Int. Cl. C08g *45/12*
U.S. Cl. 260—18 PN **11 Claims**

Drying oil fatty acid ester, and especially an epoxy resin ester, is adducted with an unsaturated polycarboxylic acid such as maleic anhydride to provide a resin which is cooked with a resin having amine and acid functionality such as a polyamide having terminal amino and carboxylic acid groups, made by the self-condensation of an amino acid to provide a compatibilized reaction product which can be dispersed in water with the aid of a base and deposited at the anode by a unidirectional current.

3,692,715

METAL SALT CATALYSTS FOR EPOXY-ANHYDRIDE RESIN SYSTEMS

Gaylord L. Groff, North St. Paul, Minn., and Ronald H. Williams, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed May 1, 1970, Ser. No. 33,942

Int. Cl. C08g *51/74*
U.S. Cl. 260—18 EP **6 Claims**

The invention provides a heat-curable, one-part, catalyst-containing resin composition which remains as a liquid having a viscosity below 5,000 cps. at room temperature for at least three months and consists essentially of, (a) an epoxy resin selected from the group consisting of polyglycidyl ethers of polyhydric phenols and polyglycidyl esters of aromatic and cycloaliphatic polycarboxylic acids, said epoxy resin containing at least 1.5 oxirane groups per average molecular weight and having a viscosity of less than 30,000 cps. at 24° C.; (b) a dicarboxylic anhydride in an amount sufficient to provide about 0.5–1.2 anhydride groups per oxirane group; and (c) a catalyst comprising a metal-aliphatic carboxylic acid salt, the metal of which is selected from the group consisting of titanium, zirconium, hafnium, cerium and thorium and wherein the aliphatic acid component has from 3 to 18 carbon atoms; and wherein said composition is capable of being substantially completely cured at 155° C. within about eight hours.

3,692,716

Patent Not Issued For This Number

3,692,717

MODIFIED NON-GELLED ALKYD RESIN COMPOSITION AND PROCESS FOR ITS PREPARATION

Werner Josef Blank and Jerry Norman Koral, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 42,482, June 1, 1970. This application May 13, 1971, Ser. No. 143,234

Int. Cl. C09d *3/66, 9/24*
U.S. Cl. 260—21 10 Claims

This invention relates to a modified, homogeneous alkyd resin composition comprising a mixture of the esterification reaction product of an oxatetracyclo undecanol, a substantially unsaturated higher fatty acid, followed by α-addition or Diels-Alder reaction with an α,β ethylenically unsaturated dicarboxylic acid and further modified by a mixture of a polymerizable styrene and an α,β ethylenically unsaturated monocarboxylic acid, and to a process for its preparation.

3,692,718

GAS PHASE POLYMERIZATION OF VINYL CHLORIDE

Jean Pierre Golstein, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Continuation-in-part of application Ser. No. 663,540, Aug. 28, 1967. This application June 22, 1970, Ser. No. 48,185

Claims priority, application Belgium, Aug. 29, 1966, 32,626

Int. Cl. C08f *1/00*
U.S. Cl. 260—23 XA 10 Claims

Polyvinyl chloride is prepared by contacting gaseous vinyl chloride with a free radical initiator in the complete absence of a liquid phase and in the presence of an inert solid, at a temperature between about 40 and 80° C. and at a pressure above the polyvinyl chloride-gaseous vinyl chloride modification point and below the saturated vapor pressure of vinyl chloride.

3,692,719

DELAYED ACTION VULCANIZATION ACCELERATOR SYSTEM

Raymond C. Srail, Parma, and Ray D. Taylor, Brecksville, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,926

Int. Cl. C08d *13/28*
U.S. Cl. 260—23.5 A 18 Claims

A useful delayed action vulcanization accelerator system is obtained when polythiocarbonates and amine- or imine-blocked isocyanates are incorporated in unsaturated rubber compositions. These accelerator systems have the advantage of being stable during processing therefore minimizing scorch of the rubber but upon increasing the temperature for vulcanization the accelerator is formed so that very rapid cures are achieved.

3,692,720

RESINOUS COMPOSITIONS FROM HYDROXYALKYLATED ROSIN DERIVATIVES

Martin F. Sloan, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 765,655, Oct. 7, 1968. This application Jan. 25, 1971, Ser. No. 109,555

Int. Cl. C08l *11/04*
U.S. Cl. 260—24 7 Claims

Novel resin compositions useful in manufacture of printing inks are prepared by reaction of hydroxalkylated rosin and hydroxyalkylated rosin adducts with an isocyanate.

3,692,721

THERMOSETTING BONDING AGENTS

Friedrich Josten, Tervoortstr. 16, Rheinkamp-Utfort, Germany; Wilhelm Lucker, Wilhelmstr. 63, Homberg, Lower Rhine, Germany; Hans Albrecht Meyer-Stoll, Kuhlmannstr. 11, Rheinkamp, Germany; and Wolfgang von Minden, Heidestr. 76, Rheinkamp-Repelen, Germany

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,399

Claims priority, application Germany, Apr. 30, 1969, P 19 22 015.6; Mar. 17, 1970, P 20 12 588.6

Int. Cl. C08g *37/18, 37/04*
U.S. Cl. 260—29.3 12 Claims

This invention relates to thermosetting bonding agents which are condensation products of phenol, urea, acetone, formaldehyde and alkanediol. Further, it pertains to the manufacture of said agents by reacting phenol, formaldehyde, urea and acetone under alkaline conditions followed by reacting the resultant product mixture with alkanediol under acidic conditions. It also relates to compositions comprising said agents and sand useful as foundry mold and cores.

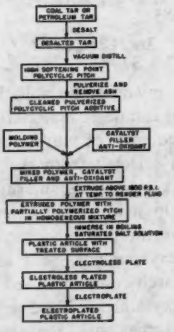
3,692,722

POLYMERIC COMPOSITIONS AND METHODS OF TREATING

Edgar W. Clarke, 121 Fairmont Ave., Laurel Springs, N.J. 08021

Continuation-in-part of application Ser. No. 862,523, Sept. 30, 1969. This application Feb. 20, 1970, Ser. No. 13,011

Int. Cl. C08g *51/52*; C08f *45/52*; C08h *13/08*
U.S. Cl. 260—28 18 Claims


COAL TAR OR PETROLEUM TAR
DESALT
DESALTED TAR
VACUUM DISTILL
HIGH SOFTENING POINT POLYCYCLIC PITCH
POLYMERIZE AND REMOVE ASH
CLEANED POLYMERIZED POLYCYCLIC PITCH ADDITIVE
MOLDING POLYMER
CATALYST FILLER ANTI-OXIDANT
MIXED POLYMER, CATALYST FILLER AND ANTI-OXIDANT
EXTRUDE ABOVE 1800 P.S.I. AT TEMP TO RENDER FLUID
EXTRUDED POLYMER WITH PARTIALLY POLYMERIZED PITCH IN HOMOGENEOUS MIXTURE
IMMERSE IN BOILING SATURATED SALT SOLUTION
PLASTIC ARTICLE WITH TREATED SURFACE
ELECTROLESS PLATE
ELECTROLESS PLATED PLASTIC ARTICLE
ELECTROPLATE
ELECTROPLATED PLASTIC ARTICLE

An organic polymer is prepared incorporating a novel polymerized pitch additive which facilitates the homoge-

neous blending and molding of dissimilar polymers, the inclusion of relatively large proportions of various fillers such as powdered metals, and the electroplating of the molded product.

3,692,723

AQUEOUS DISPERSION OF A COPOLYMER OF ETHYLENE AND VINYL ACETATE AND HEAT MELTING ADHESIVE COMPRISING SAME

Masanori Kasagi and Koreaki Gunjigake, Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,428

Claims priority, application Japan, Mar. 20, 1969, 44/20,799

Int. Cl. C08f *3/56, 29/12*
U.S. Cl. 260—29.6 E 12 Claims

Aqueous dispersions and heat melting adhesives comprising same, which dispersions contain a copolymer of at least ethylene and vinyl acetate wherein the ethylene content is from 30 to 98% by weight, the copolymer having been prepared by a copolymerization process utilizing a particular combination of nonionic emulsifier, anionic emulsifier and protective colloid.

3,692,724

WATER EXTENDIBLE POLYESTER RESINS

John C. Van Dyk, Oklahoma City, Okla., assignor to Woods Research and Development Corp., Oklahoma City, Okla.

No Drawing. Filed July 6, 1970, Ser. No. 52,737

Int. Cl. C08f *43/02*
U.S. Cl. 260—29.6 NR 20 Claims

A solid water extended polyester resin is formed by esterifying a polycarboxylic acid with a polyol, adding a crosslinking agent, forming a water in oil emulsion stabilized by an emulsifying agent, and thereafter polymerizing the resin. The emulsifying agent is selected from benzyldimethylamine, trimethylhexamethylenediamine, isophoronediamine and morpholine.

3,692,725

STABILIZED BINDER FOR WATER-FLUSHABLE NON-WOVEN WEBS

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,880

Int. Cl. C08f *29/26*
U.S. Cl. 260—29.6 BM 12 Claims

A stabilized binder mixture for application to nonwoven webs to provide a water-flushable wrapper for absorbent pads such as sanitary napkins, diapers and the like. A highly viscous solution of polyvinyl alcohol containing reactive chemicals which form crosslinking alkaline borates in situ upon heating is reduced to workable viscosity by saturating the solution with carbon dioxide. Alternatively a solution initially low in viscosity is maintained at workable viscosity by saturating the polyvinyl alcohol solution with CO_2 before adding the other chemicals.

3,692,726

PROCESS FOR THE PRODUCTION OF AQUEOUS POLYMER DISPERSIONS WHICH ARE SUBSTANTIALLY FREE FROM RESIDUAL MONOMER

Klaus Oehmichen, Wesel, Germany, assignor to Reichhold-Albert-Chemie-Aktiengesellschaft, Hamburg, Postfach, Germany

No Drawing. Continuation-in-part of application Ser. No. 793,886, Jan. 24, 1969. This application Mar. 19, 1971, Ser. No. 126,329

Claims priority, application Germany, Jan. 27, 1968, P 17 45 360.0

Int. Cl. C08l *15/36, 37/14*
U.S. Cl. 260—29.6 R 3 Claims

A process for the production of dispersions containing polymers or copolymers, practically free from monomers, which are obtained by emulsion polymerization or copolymerization in an aqueous medium in which monomers are used which contain unsaturated acids or their esters such as acrylic acid and/or methacrylic acid or their esters, emulsifiers, water-soluble redox-systems with pH values between 2 and 6 and peroxy compounds the improvement comprising adding peresters and/or perketals to the reaction mixture, the decomposition temperatures of the peresters or perketals being preferably between 30 and 150° C., so that the mixture is polymerized at the polymerization temperature until the residual monomer content becomes negligible.

3,692,727

POLYTETRAFLUOROETHYLENE DISPERSION COATINGS CONTAINING AMMONIUM CHROMATE OR AMMONIUM CHROMATE-AMMONIUM PHOSPHATE MIXTURE

Norman Duffield Peschko, Haddonfield, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 794,785, Jan. 28, 1969. This application May 14, 1971, Ser. No. 144,648

Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F 3 Claims

An aqueous dispersion of polytetrafluoroethylene useful for applying a "non-stick" coating to substrates contains from about 2% to about 5% of a soluble salt selected from the group consisting of ammonium chromate and a mixture of ammonium chromate and ammonium phosphate wherein there is at least 0.5 weight percent of the chromate. The salt additive gives the dispersions storage-stability and promotes adhesion of the PTFE coating to the substrate.

3,692,728
HYDRAULIC BINDERS AND COMPOSITIONS INCLUDING THESE BINDERS
Bernard Bonnel, Lyon, France, assignor to Progil, Paris, France
No Drawing. Continuation of application Ser. No. 705,948, Feb. 16, 1968. This application Mar. 8, 1971, Ser. No. 122,161
Int. Cl. C04b 7/32
U.S. Cl. 260—29.4 UA 4 Claims

Compositions for mortars and cements which harden rapidly and give great resistance including a hydraulic binder of high alumina cement and a polymer of acrylamide and formaldehyde and a polymerization catalyst.

3,692,729
PROCESS FOR THE MANUFACTURE OF INSOLUBLE SYNTHETIC PRODUCTS ON THE BASIS OF EPOXY COMPOUNDS CONTAINING URETHANE GROUPS
Herbert Kolbel, Georg Manecke, and Hussain Kashif El-Ghatta, Berlin, Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,148
Claims priority, application Germany, Sept. 22, 1969, P 19 47 873.0
Int. Cl. C08f 45/32; C08g 45/04
U.S. Cl. 260—30.4 EP 7 Claims

The invention relates to the manufacture of insoluble plastics by reaction of epoxide compounds containing urethane groups with compounds which possess functional groups capable of reaction with epoxide groups, in the presence of unsaturated polymerisable monomers and/or reactive diluents. The epoxide compounds are obtained by reaction of an adduct with at least 2 NCO groups, which is manufactured from a polyisocyanate or diisocyanate and a compound with at least 2 hydroxyl groups, and compounds which contain one hydroxyl group and one epoxide group.

3,692,730
MOLD RELEASE AGENT FOR NYLON
Willard M. Sims, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,415
Int. Cl. C08g 51/44
U.S. Cl. 260—32.6 N 11 Claims

The mold release properties of nylon compositions are significantly improved by incorporating about 0.01 to 5.0 parts per 100 parts of nylon of a hydrocarbon diamine having about 25 to 50 carbon atoms in the hydrocarbon chain.

3,692,731
METALLIZING COATING COMPOSITIONS CONTAINING COATED METAL FLAKES
Walter R. McAdow, Grosse Pointe Farms, Mich., assignor to Mobil Oil Corporation
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,106
Int. Cl. C08g 51/04, 51/34
U.S. Cl. 260—32.8 R 12 Claims

Metallizing coating compositions having greater sparkle and glitter are formed by including in the coating composition insoluble resin-supported planar reflective metal flakes in an amount of from about 0.0003% to about 0.035% of metal (particularly aluminum) based on the weight of the composition. The flakes are supported and rendered more planar by using a metal film surfaced on both sides with a relatively insoluble resinous film having a thickness of at least 0.01 mil. When the supported metal film is broken up to form flakes, the flakes are flatter and reflect light over a larger portion of their surface to permit use in smaller amount.

3,692,732
CURABLE POLYORGANOSILOXANE ELASTOMERS AND PROCESS FOR CURING SAME
Bruno Degen, Schildgen, Heinz Goller, Cologne, Wilfried Kniege, Bergisch-Gladbach, Walter Noll, Opladen, and Werner Buchner, Leichlingen, Germany (all % Farbenfabriken Bayer AG, Leverkusen, Germany)
No Drawing. Filed Mar. 26, 1971, Ser. No. 128,573
Claims priority, application Germany, Apr. 1, 1970, P 20 15 402.3
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 12 Claims

The present invention relates to a process for the production of an improved polyorganosiloxane composition convertible by heating to the solid elastic state wherein cerium carbonate is admixed with the polyorgano-siloxane in order to reduce the curing time thereof and in order to increase the thermal stability of the cured elastomer.

3,692,733
RESIN COATED SAND
Calvin Keith Johnson, Palos Heights, Ill., assignor to CPC International Inc.
No Drawing. Filed Mar. 8, 1971, Ser. No. 122,125
Int. Cl. C08g 51/04
U.S. Cl. 260—38 6 Claims

A resin coated sand exhibiting low dust levels consisting essentially of about 1,000 parts of resin coated sand, and from about 0.01 to about 1.0 parts of silicone fluid.

3,692,734
PROCESS OF MAKING A RUBBER COMPOSITION FOR ADHERING RUBBERS AND TEXTILES
Erhard Klötzer, Hanau am Main, and Willi Clas, Bruhl-Berzdorf, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt, vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed Oct. 10, 1969, Ser. No. 866,143
Claims priority, application Germany, Oct. 12, 1968, P 18 02 761.7
Int. Cl. C08c 11/10; C08d 9/10; C08g 51/04
U.S. Cl. 260—38 7 Claims

A premix is made for incorporation in a natural or synthetic vulcanizable rubber mixture of improved adhesion to textiles by coagulating an aqueous dispersion of finely divided precipitated silicic acid or silicate as a rubber latex and mixing resorcinol and hexamethylenetetramine as resin-forming components into the dry coagulate.

The invention also comprises the vulcanizable premix thus made in which specific amounts of synthetic rubber, silicic acid, resorcinol and hexamethylenetetramine are incorporated.

3,692,735
INORGANIC LITHIUM-CHROME-SILICATE PIGMENTS
Gordon H. Johnson, Olmsted Falls, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
Continuation-in-part of application Ser. No. 645,353, June 12, 1967. This application Aug. 15, 1969, Ser. No. 850,610
Int. Cl. C08f 45/04; C08g 51/04; C09c 1/34
U.S. Cl. 260—41 25 Claims

This invention relates to inorganic green lithium chrome silicate pigments of the formula $RCr(SiO_3)_2$ wherein R is sodium, lithium and/or any mixture of sodium and lithium adding up to the stoichiometric equivalent of one molar equivalent of R. These compositions may also include mixtures of a compound such as defined above, with one or more of the polymorphic forms of silica. These compounds are prepared by calcining an admixture of a sodium compound and/or a lithium compound with a chromium compound and a silicon compound.

3,692,736

POLYESTER RESIN GRANULATES AND PROCESS FOR PREPARATION OF SAME

Jean-Claude Besnard, 38-40 rue Louis Braille, 95-Deuil-La-Barre, and Lylian M. L. Pasteur, 11, rue Michelet, 92-Rueil-Malmaison, both of France, assignors to Resines Et Dispersions "Redis," Paris, France

Filed Aug. 17, 1970, Ser. No. 64,578
Claims priority, application France, Aug. 18, 1969, 6928212
Int. Cl. C08g 51/04
U.S. Cl. 260—40 R 13 Claims

Free-flowing, non-tacky polyester resin compositions for use in molding and a method for the preparation of same wherein a polyester resin, a monomer, reinforcing fibers, an initiator, a thickener and a charge filler are mixed in at least four stages wherein at least the polyester resin, the monomer, the reinforcing fibers, the initiator and the charge filler are mixed in a first stage at ambient temperatures, the balance of the components are added and the resulting mixture mixed in a second stage until the composition has a dough-like consistence, the resulting composition is mixed in a third stage while cooling and the composition is mixed in a fourth stage in the presence of lamellar filler to imbed the filler in the composition whereby the composition is relatively non-tacky and free-flowing.

3,692,737

STABLE POLYDIORGANOSILOXANE GUMS

Thomas L. Laur, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 1, 1971, Ser. No. 111,639
Int. Cl. C08g 51/04, 51/56
U.S. Cl. 260—45.75 R 2 Claims

Polydiorganosiloxane gum is stabilized by the addition of fume titanium dioxide. The stabilized polydiorganosiloxane gums can be used to make silicone rubbers and adhesives.

3,692,738

ULTRAVIOLET STABILIZER SYSTEM FOR POLYOLEFINS

Ronald D. Mathis, Mauldin, and James S. Dix, Taylors, both of S.C., assignors to Phillips Petroleum Company

Filed April 8, 1971, Ser. No. 132,618
Int. Cl. C08f 45/62
U.S. Cl. 260—45.75 N 10 Claims

An ultraviolet light stabilizer composition for polyolefins which comprises (2,2'-thiobis [4-tert-octylphenolato])-n-butylamine nickel (II) and a nickel complex of a halogenated β-diketone.

3,692,739

Patent Not Issued For This Number

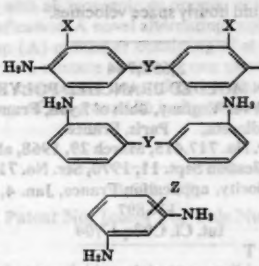
3,692,740

PHNOLIC-SOLVENT-SOLUBLE AROMATIC POLYAMIDE-IMIDE AND PROCESS FOR PRODUCING SAME

Munehiko Suzuki, Yokosuka; Etsuo Hosokawa, Yokohama; Misao Waki, Kawasaki, and Masatada Fukushima, Yokohama, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki-shi, Japan

Filed June 18, 1970, Ser. No. 47,380
Claims priority, application Japan, June 24, 1969, 44/49959
Int. Cl. C08g 20/32
U.S. Cl. 260—47 CP 12 Claims

A novel aromatic polyamide-imide is synthesized by heating and reacting a mixture of trimellitic acid and 3,3', 4,4'-benzophenone tetracarboxylic acid with a diamine represented by the formula:



or

in substantially equimolar amounts in an organic solvent. Up to 70 mole per cent of said acid component may be replaced by other aromatic tetracarboxylic acids and up to 70 mole per cent of said diamine component may also be replaced by other aromatic diamines. The greatest feature of said novel aromatic polyamide-imide is that it is soluble in phenolic solvents. The solution of the polyamide-imide in a phenolic solvent can be used as a varnish for forming a heat-resistant film and as a magnet wire and in other various fields.

3,692,741

METAL 2,5-DIMETHOXY CINNAMIC SALTS AS CATALYSTS-OPTICAL BRIGHTENERS FOR POLYESTER RESINS

John A. Price, 225 N. Princeton Ave., Swarthmore, Pa., and Mary J. Stewart, 2 War-Trophy Lane, Riddlewood, Media, Pa., assignors to TMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 886,757, Dec. 19, 1969, abandoned. This application July 15, 1970, Ser. No. 55,266
Int. Cl. C08g 17/013
U.S. Cl. 260—47 C 4 Claims

Metal salts of 2,5-dimethoxy cinnamic acid and polyester resins comprising the condensation polymerization product of (a) a lower alkyl diester of a dicarboxylic acid, (b) an aliphatic diol, and (c) a minor amount of a manganese, cobalt, or zinc salt of 2,5-dimethoxy cinnamic acid.

3,692,742

WATER RESISTANT POLYURETHANE/POLYMER LAMINATE

Theodore A. Underwood, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 408, Jan. 2, 1970. This application Sept. 8, 1970, Ser. No. 70,464
Int. Cl. B65d 25/14
U.S. Cl. 220—63 A 5 Claims

A water resistant laminate comprising a cured ethylenic unsaturated polymer of an olefin containing from two to 20 carbon atoms and a polyurethane comprising a reaction product of 4,4'-dicyclohexyl methane diisocyanate, with an aromatic diamine and a polyester selected from the group consisting of polyhexamethylene adipate, polyhexamethylene azelate and polytetramethylene azelate and polytetramethylene adipate.

3,692,743

PREPARATION OF 2,5-DIMETHYLHEXADIENES

Robert M. Thompson, Wilmington, Del., assignor to Sun Oil Company, Philadephia, Pa.

Filed April 16, 1971, Ser. No. 134,857
Int. Cl. C07c 11/12
U.S. Cl. 260—681 R 8 Claims

Selective formation of 2,5-dimethylhexadiene-2,4, or mixtures of the same with the corresponding 2,5-dimethylhexadiene-1,4, or of the latter with 2,5-dimethylhexadiene-1,5 in

good yield is achieved by the vapor phase ring opening dehydration of 2,2,5,5-tetramethyltetrahydrofuran, using alkali or platinum selected metal oxide catalysts at varying temperatures and liquid hourly space velocities.

3,692,744

INJECTION MOLDED BRANCHED POLYESTERS

Rene Rich, and Yves Vaginay, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Division of Ser. No. 717,415, March 29, 1968, abandoned. This application Sept. 11, 1970, Ser. No. 71,330
Claims priority, application France, Jan. 4, 1968, 134,897
Int. Cl. C08q 17/04
U.S. Cl. 260—75 T 4 Claims

Polyester moulding materials which can be injection moulded on a technical scale to give products having good mechanical properties are obtained by having present in the polyesterification mixture, besides a terephthalic or mainly terephthalic acid component and a diol component, 0.05–3 moles percent, on the acid component, of a compound containing at least 3, preferably 3 or 4, ester-forming groups this may for example be a tri- or tetra-carboxylic acid, a triol or tetrol, or a hydroxy carboxylic acid containing in all 3 or more ester-forming groups.

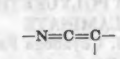
3,692,745

METHOD FOR CHEMICALLY MODIFYING THREAD-FORMING POLYESTERS

Eenje Molenaar, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Jan. 19, 1971, Ser. No. 107,858
Claims priority, application Netherlands, Jan. 24, 1970, 7001022
Int. Cl. C08g 17/14
U.S. Cl. 260—75 T 6 Claims

A method for the chemical modification of a thread-forming polymeric polyester containing carboxyl end groups, which comprises treating the molten polyester with an unsaturated organic compound capable of reacting with said carboxyl end groups, the compound having one or two



structural units which react with carboxyl end groups to form imide bonds therein.

3,692,746

INTERPOLYMERS OF VINYLIDENE CHLORIDE AND BLOCKED VINYL ISOCYANATES AND PROCESS FOR COATING ARTICLES THEREWITH

James T. K. Woo, and Thayer A. Brown, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 30, 1970, Ser. No. 93,885
Int. Cl. C08q 22/32
U.S. Cl. 260—77.5 TB 4 Claims

This invention relates to polymer compositions, coated articles and processes, and more particularly, to interpolymers of vinylidene chloride and vinyl isocyanates having blocked isocyanate functionalities which interpolymers provide improved coatings on a wide variety of substrate material.

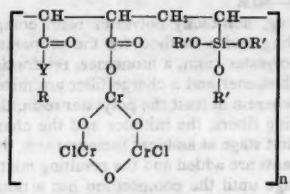
3,692,747

CHROMIUM COMPLEXES OF MALEIC ANHYDRIDE COPOLYMERS

Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,541
Int. Cl. C08f 27/04
U.S. Cl. 260—78.5 T 2 Claims

This invention relates to new copolymeric compositions having the reoccurring structural formula:



In the above formula R is a C_{12} to C_{22} aliphatic group, R′ is a C_3 to C_6 aliphatic group, n represents an integer and Y is either O or NH_3.

These polymers are useful in treating a variety of surfaces, and in particular sheep skin, to impart thereto a high degree of water repellancy.

3,692,748

SHRINKABLE FILM-FORMING COPOLYAMIDES PREPARED BY COPOLYMERIZING W-AMINOUNDECANOIC ACID AND THE SALT OF A DICARBOXYLIC ACID AND TRIMETHYLHEXAMETHYLENE DIAMINE

Helmut Huhn, and Lutz Hoppe, both of Walsrode, Germany, assignors to Wolff & Co., Aktiengesellschaft, Walsrode, Germany

Filed Nov. 9, 1970, Ser. No. 88,123
Claims priority, application Germany, May 14, 1968, P 17 70 406.2
Int. Cl. C08g 20/04
U.S. Cl. 260—78 A 6 Claims

Shrinkable film-forming copolyamides which are glass-clear in appearance and which are obtained by poly-condensation of 65 – 85 percent by weight of ω-amino-undecanoic acid and 35 – 15 percent by weight of a salt of a dicarboxylic acid and a diamine, between 50 and 100 mol % of the diamine being trimethylhexamethylene diamine, and films produced therefrom.

3,692,749

POLYAMIDES OF TRIMETHYLHEXAMETHYLENEDIAMINE AND CYCLOHEXANE DICARBOXYLIC ACID

Karl Schmitt, Herne; Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, all of Germany, assignors to Scholven-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed June 26, 1969, Ser. No. 836,950
Claims priority, application Germany, July 2, 1968, P 17 70 766.3
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 3 Claims

Polyamide of a diamine of the group 2,4,4-trimethylhexamethylenediamine, 2,2,4-trimethylhexamethylenediamine, and mixture thereof, and dicarboxylic acid comprising cycloaliphatic dicarboxylic acid. The polyamides are soluble in alcohols so that they are suitable for use in formulation of film forming compositions.

3,692,750

PROCESS FOR PREPARING POLYAMIDES

Irl N. Duling, West Chester; Gary L. Driscoll, Boothwyn, both of Pa., and Robert E. Moore, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 542,229, April 13, 1966, abandoned. This application Sept. 25, 1970, Ser. No. 75,743

Int. Cl. C08g *20/00*

U.S. Cl. 260—78.4 N 9 Claims

Polyamides are produced by reacting an organic dinitrile with adamantane and alkyl-adamantane compounds having two substituents selected from the group consisting of chlorine, bromine and hydroxy in the presence of a strong sulfuric acid corresponding to 99.5–118% H_2SO_4 equivalent or polyphosphoric acid.

3,692,751

Patent Not Issued For This Number

3,692,752

ADHESIVE COMPOSITION CONTAINING α-CYANOACRYLATE AS ITS MAIN INGREDIENT

Kisuke Setsuda, Ichikawa-shi, and Iwakichi Sugiyama, Narashino-shi, both of Japan, assignors to Matsumoto Seiyaku Kogyo Kabushiki Kaisha, Menamiyahata, Ichikawa-shi, Chiba-ken, Japan

Filed Oct. 29, 1969, Ser. No. 872,377

Claims priority, application Japan, Oct. 31, 1968, 43/19425

Int. Cl. C08f *15/16*

U.S. Cl. 260—78.5 N 1 Claim

α-cyanoacrylate adhesive compositions each of which comprises a α-cyanoacrylic ester and a diacrylic ester compound or dimethacrylic ester compound which is added to the former ester and adhesives prepared from said composition having very excellent heat-resistance.

3,692,753

TERPOLYMERS CONTAINING THIAALKYL ACRYLATES OR THIAALKYLACRYLAMIDES

Donald A. Smith; Ernest J. Perry, both of Rochester, N.Y., and Kenneth R. Hollister, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 701,084, Jan. 29, 1968, Pat. No. 3,615,624. This application Feb. 16, 1970, Ser. No. 11,839

Int. Cl. C08f *15/40*; G03c *1/04*

U.S. Cl. 260—79.7 14 Claims

This invention relates to interpolymers, and preferably terpolymers, containing a balanced ratio of certain monomers to facilitate easy coagulation and redispersion. Preferably, the interpolymers comprise at least one monomer which is an effective silver halide peptizer in polymerized form. Balanced polymers of this type provide a system wherein silver halide can be precipitated in the presence of the balanced polymer and can be subsequently coagulated and easily redispersed to permit fast and simple washing of the silver halide.

3,692,754

HIGHLY LACTONIZED COPOLYMERS AND ALTERNATING COPOLYMERS USING UNSATURATED ETHERS

Masaaki Hirooka, 7-32 Funakicho, Ibaragi-shi; Kenji Takeya, 1900, Kansoka, Saidaijicho, Okayama-shi; Yoshihiro Uno, 300-43, Minato, Okayama-shi; Akira Yamane, 1900, Kansoka, Saidaijicho, Okayama-shi, and Kunio Maruyama, 1900, Kansoka, Saidaijicho, Okayama-shi, all of Japan

Filed March 26, 1970, Ser. No. 22,997

Claims priority, application Japan, April 5, 1969, 44/26482; Dec. 11, 1969, 44/99961

Int. Cl. C08f *15/00*, *15/40*

U.S. Cl. 260—80.3 E 13 Claims

An alternating copolymer composed of at least one monomer of group (A) consisting of unsaturated esters of carboxylic acids and unsaturated ethers, and at least one monomer of group (B) consisting of conjugated vinyl compounds having nitrile or carbonyl radicals, is highly lactonized by treating with an inorganic or organic acid, as produced or after sapoinfication. A novel alternating copolymer composed of the group (A) monomer consisting of at least one unsaturated ether or a mixture of at least one unsaturated ether and at least one unsaturated ester of carboxylic acid, and at least one monomer of the group (B) is also proposed.

3,692,755

Patent Not Issued For This Number

3,692,756

HYDROCARBON-DERIVED RESINS HAVING LOW SOFTENING POINT

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1970, Ser. No. 52,133

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.7 6 Claims

Hydrocarbon resins suitable as tackifiers having softening points in the range of about 25° C. to about 80° C., a volatility of less than about 6 weight percent and a number average molecular weight in the range of about 1000 to about 1400 which comprises from about 5 to about 60 percent units derived from piperylene, from about 1 to about 30 percent units derived from 1,3-butadiene, from about 5 to about 60 percent units derived from isobutylene, from about 5 to about 30 percent units derived from 2-methyl-1-butene, from about 5 to about 40 percent units derived from 2-methyl-2-butene, from about 0 to about 10 percent units derived from isoprene and from about 0 to about 10 percent units derived from other hydrocarbons containing four to six carbon atoms, wherein the ratio of units derived from piperylene to units derived from 1,3-butadiene is from about 10:1 to about 1:2 and the ratio of units derived from piperylene to units derived from isobutylene is from about 6:1 to about 1:6.

3,692,757

THERMOSETTING ACRYLICS CONTAINING OXAZOLINE GROUPS

Rostyslaw Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 665,745, Sept. 6, 1967, Pat. No. 3,609,161. This application Nov. 12, 1970, Ser. No. 89,116

Int. Cl. C08f *3/62*, *15/16*, *15/40*

U.S. Cl. 260—86.1 N 6 Claims

Novel polymerizable unsaturated oxazoline compounds are obtained by dehydrating a hydroxyalkyl-substituted aminoethanol and esterifying or transesterifying the resulting alcohol with an ethylenically unsaturated monocarboxylic acid, an ester of such an acid, or an ethylenically unsaturated monocarboxylic acid halide. Preferred embodiments include 2,4-dialkyl-2-oxazoline-4-alkyl acrylates and methacrylates. Polymers of such compounds, and particularly their interpolymers with other ethylenic monomers provide thermosetting film-forming compositions, useful as protective coatings and adhesives.

3,692,758

Patent Not Issued For This Number

3,692,759

EXTRUDABLE POLYTETRAFLUOROETHYLENE POWDER

Luke Ralph Ocone, Wyndmoor, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 23, 1971, Ser. No. 118,158
Int. Cl. C08f 3/24, 15/06
U.S. Cl. 260—92.1 3 Claims

Polytetrafluoroethylene resin powder having improved paste extrusion properties is prepared by freeze drying aqueous PTFE latex solids.

3,692,760

REGULATION OF MOLECULAR WEIGHT OF PRODUCTS OBTAINED BY THE RING OPENING POLYMERIZATION OF CYCLOOLEFINES

Josef Witte, Koeln; Gottfried Pampus, Leverkusen; Nikolaus Schon, Leverkusen, and Gunter Marwede, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 30, 1970, Ser. No. 85,782
Claims priority, application Germany, Nov. 13, 1969, P 19 57 026.4
Int. Cl. C08f 3/02, 7/02
U.S. Cl. 260—93.1 6 Claims

A process for the production of cycloolefin polymers by the polymerization of cycloolefins in solution in inert organic solvents, using catalysts of tungsten salts and organic aluminum compounds, characterized in that an organic cycloolefin solution having a water content of 5 to 50 ppm, preferably 10 to 20 ppm, is used for the polymerization.

3,692,761

Patent Not Issued For This Number

3,692,762

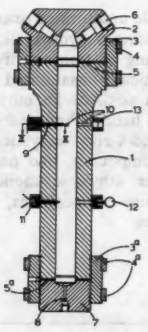
Patent Not Issued For This Number

3,692,763

HIGH PRESSURE POLYMERIZATION OF ETHYLENE AND APPARATUS THEREFORE

Pieter Van Saane, Beatrixlaan 21, Geleen, and Robert J. M. Paumen, Rijksweg N. 296, Sittard, both of Netherlands

Filed Sept. 17, 1970, Ser. No. 73,170
Claims priority, application Netherlands, Sept. 19, 1969, 6914299
Int. Cl. C08f 3/04, 1/60, 1/98
U.S. Cl. 260—94.9 P 14 Claims



A process for the high pressure polymerization of ethylene in an autoclave reactor is disclosed, wherein the autoclave contents are maintained in a thoroughly mixed condition by converting the pressure energy of the ethylene feed into kinetic energy by throttling the flow of ethylene feed into the autoclave, to create a turbulent flow wherein the Reynolds number exceeds 2100, to produce macroscopic circulations in the autoclave. Such a process has numerous advantages, primarily in the reduction of the number of explosive decompositions of ethylene. Apparatus for conducting such a process are also disclosed, wherein such apparatus includes an autoclave having at least one ethylene feed inlet which imparts a rotary motion to the autoclave contents.

3,692,764

Patent Not Issued For This Number

3,692,765

Patent Not Issued For This Number

3,692,766

CALCIUM LACTULOSATE

Hans Reinicke, Schwarzwaldstrasse 56; Senta Leonhauser, Kallstader Strasse 11, both of, 6804 Ilvesheim Bei Mannheim, and Rudolf Weidenhagen, Emsheimer Strasse 40, 6501 Ulversheim Uber Mainz, all of Germany

Division of Ser. No. 773,671, Nov. 5, 1968, Pat. No. 3,562,012. This application Oct. 22, 1970, Ser. No. 83,161
Claims priority, application Germany, Nov. 7, 1967, P 16 43 834.9
Int. Cl. C07c 47/18
U.S. Cl. 260—209 R 1 Claim

Calcium lactulosate prepared by introducing into a dilute aqueous solution of a crude lactulose syrup about 0.7 to 4 parts by weight of calcium oxide per part by weight of lactulose in the crude syrup at a temperature of about 0° to 15° C., allowing the resultant mixture to stand under conditions permitting maintenance of the temperature to about 0° to 15° C., and separating off the calcium lactulosate thereby formed.

3,692,767

PROCESS FOR MAKING LINCOMYCIN AND ANALOGS THEREOF AND NOVEL COMPOUNDS OBTAINED THEREBY

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 867,362, Oct. 17, 1969, abandoned. This application May 6, 1970, Ser. No. 35,256
Int. Cl. C07c 47/18
U.S. Cl. 260—210 R 4 Claims

Lincomycin is formed by tosylating methyl 1-thio-α-D-galacto-octopyranoside to form methyl 6-O-(p-toluenesulfonyl)-1-thio-α-D-galactopyranoside, acylating the resulting compound to form the peracylate, replacing the tosyl group with iodine to form peracylated methyl 6-deoxy-6-iodo-1-thio-α-D-galactopyranoside, replacing the iodo group by a nitro group to form peracylated methyl 6-deoxy-6-nitro-1-thio-α-D-galactopyranoside, treating the latter with acetaldehyde and sodium methoxide to form methyl 6-deamino-6-nitro-α-thiolincosaminide, reducing the latter with lithium aluminum hydride to form methyl α-thiolincosaminide, and acylating the latter with trans-1-methyl-4-propyl-L-2-pyrrolidinecarboxylic acid. By substituting other aldehydes and/or other 1-thio-α-D-galactopyranosides, analogs of lincomycin are obtained.

3,692,768

NACREOUS PIGMENTS FROM NUCLEIC ACID DERIVATIVES

Toyoharu Takata; Keisuke Fujii, both of Tokyo; Nobumitsu Yano, Saitama-ken; Masao Fukushima; Fumio Nagayoshi, both of Tokyo, and Aiko Mizuno, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 13, 1969, Ser. No. 833,152

Claims priority, application Japan, June 15, 1968, 43/140981; June 15, 1968, 43/140982

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R 10 Claims

Synthetic nacreous pigments comprise at least one thin plate-shaped crystal having a length of 3 to 100 microns, a width of 1 to 40 microns and a thickness of 0.05 to 3 microns, said individual crystal being composed of one nucleic compound selected from the group consisting of nucleic bases, nucleosides and nucleotides. The pigments are non!-toxic, have a strong resistance to chemicals, and thus are applicable to cosmetics or decoration of the surfaces of toys and tablewares, or food itself or improvement in the freshness of beverages.

3,692,769

AZO COMPOUNDS CONTAINING AN ARYLSULFONYL PHENYL DIAZO COMPONENT

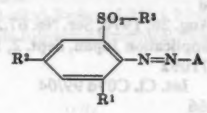
Max A. Weaver, Route 8, Kingsport, Tenn., and James M. Straley, Route 10, Kingsport, Tenn.

Filed Feb. 18, 1970, Ser. No. 12,438

Int. Cl. C09b *29/34*, *29/36*; D06p *3/52*

U.S. Cl. 260—207.1 8 Claims

Azo compounds having the general formula



in which each of R^1 and R^2 is a conventional diazo component substituent or the group $—SO_2—R^3$, R^3 is an aryl group, and A is the residue of a disperse dye aniline or tetrahydroquinoline coupling component which bears an acylamido group on a ring carbon atom ortho to the azo group. The azo compounds produce reddish-blue to greenish-blue shades on polyester fibers and exhibit good dyeability, fastness to light and resistance to sublimation.

3,692,770

3-CYCLOALKYLTHIO-3-AZABICYCLO (3.2.2) NONANES

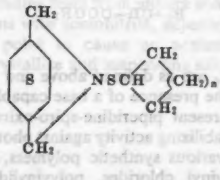
John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 17,970, March 9, 1970, Pat. No. 3,627,738. This application June 3, 1971, Ser. No. 149,828

Int. Cl. C07d *41/04*

U.S. Cl. 260—239 BA 4 Claims

Compounds of the formula



wherein *n* is 2 to 9 which are stabilizers of organic compounds and inhibitors of premature vulcanization.

3,692,771

PROCESS FOR PREPARING DIFLUORODIAZIRINE

Robert L. Rebertus, Mendota Heights, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1964, Ser. No. 405,026

Int. Cl. C07d *45/00*

U.S. Cl. 260—239 AA 4 Claims

1. A process for the production of difluorodiazirine comprising the steps of

I. reducing difluorobis(difluoramino)methane with tetra-lower alkyl quaternary ammonium iodide or anion exchange resin comprising quaternary ammonium groups and iodide anions and

II. recovering difluorodiazirine as a product of the reaction.

3,692,772

PROCESS FOR PREPARING 1,4-BENZODIAZEPIN-2-ONES

Kanji Meguro, Nishinomiya; Hiroyuki Tawada, Kyoto; Yutaka Kuwada, Ashiya, Hyogo, and Toru Masuda, Nishinomiya, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

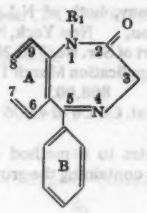
Filed Sept. 3, 1969, Ser. No. 855,042

Claims priority, application Japan, Sept. 3, 1968, 43/63323; Sept. 3, 1968, 43/63324

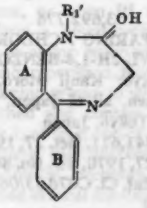
Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D 2 Claims

The process for preparing benzodiazepin-2-one derivatives of the formula



wherein R_1 is hydrogen or lower alkyl, and rings A and B are either unsubstituted or substituted by one or more groups of nitro, trifluoromethyl, halogen, alkyl and alkoxy groups, which comprises subjecting a 2-amino-α-phenylbenzylideneaminoacetal derivative to ring-closure, hydrolyzing the resultant product to obtain the 2-hydroxybenzodiazepine derivative, and subjecting such derivative to oxidation to yield the benzodiazepin-2-one derivative. Also provided are novel 1-alkyl-2-hydroxybenzodiazepine derivatives of the formula



wherein R'_1 is lower alkyl and rings A and B may be either unsubstituted or substituted as defined above, such derivatives being useful as intermediates in the above process and also as tranquilizing agents.

3,692,773

ARALKYL PENTA-AND HEXAMETHYLENIMINE AND INTERMEDIATES THEREFOR

Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.

Division of Ser. No. 799,943, Feb. 17, 1969, Pat. No. 3,637,659, which is a continuation-in-part of Ser. No. 717,363, March 29, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,617

Int. Cl. C07d *29/24*

U.S. Cl. 260—239.3 R 9 Claims

The compounds are of the class of aralkyl penta- and hexamethylenimines which are useful as anti-arrhythmic agents; and to certain intermediates useful in the syntheses of such methylenimines.

3,692,774

2-CARBOXAMIDO PENICILLIN DERIVATIVES

John H. Sellstedt, 266 Iven Ave., St. Davids, Pa., and Milton Wolf, 1100 Westchester Pike, West Chester, Pa.

Filed Aug. 31, 1970, Ser. No. 68,527

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 7 Claims

Phenoxymethyl, α-aminobenzyl and phenylimidazolidinyl penicillin derivatives are prepared. The compounds are effective antibacterials with a substantial spectrum of activity and good duration of action.

3,692,775

RACEMIZATION OF D-OR L-α-AMINO-CAPROLACTAM IN THE PRESENCE OF METAL IONS

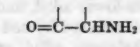
Anne-Marie Margaretha Kubanek, Basking Ridge, and Young Chul Kim, Parsippany, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 780,287, Nov. 29, 1969, abandoned. This application March 17, 1969, Ser. No. 808,003

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R 9 Claims

This invention relates to a method of racemizing enantiomers of compounds containing the group



particularly enantiomers of α-amino-E-caprolactam, by contacting said enantiomers with ions of aluminum, chromium, cobalt, copper, indium, nickel, palladium, or zinc, preferably by dissolving salts of said metals in solutions of said enantiomers.

3,692,776

PROCESS FOR PREPARING 7-CHLORO-1,3-DIHYDRO-1-METHYL-5-PHENYL-2H-1,4-BENZODIAZEPIN-2-ONE

Minoru Shindo, Tokyo; Kanji Moro, Tokyo, and Teizo Shinozaki, Chiba-ken, all of Japan, assignors to Seijaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 841,611, Oct. 27, 1970. This application Oct. 27, 1970, Ser. No. 84,549

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D 15 Claims

The known 7-chloro-1,3-dihydro-l-methyl-5-phenyl-2H-1, 4-benzodiazepin-2-one which was found to be pharmacologically effective in neuro-psychic disorders is prepared easily and in high yield by an improved process comprising the reaction of a novel intermediate, N-aminoacetyl-5-chloro-N-methylanthranilic acid, with phosphorus pentachloride followed by reacting with benzene in the presence of aluminum chloride, the intermediate which is also found to have valuable pharmacological activities being, in turn, prepared by the reaction of 5-chloro-N-methyl-N-phthalimidoacetylanthranilic acid with hydrazine.

3,692,777

5H-PYRROLO [2,1-C][1,4] BENZODIAZEPIN-5-ONES

Kei Arima; Gakuzo Tamura, both of Tokyo; Heiichi Sakai, and Masanobu Kohsaka, both of Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 29, 1969, Ser. No. 888,991

Claims priority, application Japan, Dec. 30, 1968, 44/83

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 T 9 Claims

This invention contains a novel antibiotic produced by a culture of *Streptomyces achromogenes* var. *tomaymyceticus* in a nutrient medium and derivatives thereof which are active against a number of microorganisms, phages and viruses, and effective in the treatment of tumors.

3,692,778

PIPERIDINE-SPIRO-OXIRANE DERIVATIVES

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Ichiro Watanabe, all of Tokyo, Japan, assignors to Sankyo Company Limited

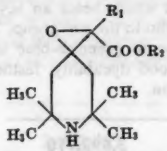
Filed Aug. 26, 1970, Ser. No. 67,246

Claims priority, application Japan, Sept. 2, 1969, 44/69451; Aug. 15, 1970, 45/71092

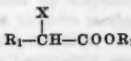
Int. Cl. C07d *99/04*

U.S. Cl. 260—293.66 4 Claims

New piperidine-spiro-oxirane derivatives having the formula



wherein R_1 represents hydrogen atom or an alkyl group of one to four carbon atoms and R_2 represents an alkyl group of one to eight carbon atoms. These piperidine-spiro-oxirane derivatives are prepared by reacting triacetonamine with a halogenated aliphatic carboxylic acid ester having the formula



wherein R_1 and R_2 are as defined above and X represents a halogen atom in the presence of a base capable of producing carbanion. The present piperidine-spiro-oxirane derivatives show a superior stabilizing activity against photo- and thermo-deterioration of various synthetic polymers, e.g., including polyolefins, polyvinyl chlorides, polyvinylidene chlorides, polyacetals, polyesters, polyamides and polyurethanes and thus they are useful as a stabilizer for preventing said deterioration.

3,692,779
7-[N-(SUBSTITUTED-IMIDOYL)AMINOACETAMIDE] CEPHALOSPORANIC ACIDS AND DERIVATIVES THEREOF

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, 02, New York, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,314
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 21 Claims

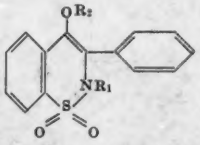
7-[N-(substituted-imidoyl)aminoacetamido]cephalosporanic acids and their salts and the corresponding betaines and desacetoxy derivatives are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative bacteria. 7-[N-(Phenylacetimidoyl)aminoacetamidoi]cephalosporanic acid, a preferred embodiment of the invention, is prepared for example, by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 7-(3-benzyl-1,2,4-oxadiazole-5-one-4-acetamido)cephalosporanate which is prepared in turn by reaction of 7-aminocephalosporanic acid with 3-benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.

3,692,780
4-SUBSTITUTED-2-ALKYL-3-PHENYL-2H-1,2-BENZOTHIAZINE-1,1-DIOXIDES AND PROCESSES FOR THEIR PRODUCTION

Harold Zinnes, Rockaway, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Filed Oct. 14, 1970, Ser. No. 80,788
Int. Cl. C07d 93/02
U.S. Cl. 260—243 R 7 Claims

4-substituted-2-alkyl-3-phenyl-2H-1,2-benzothiazine-1,1-dioxides having the following structural formula are disclosed



I

wherein R_1 is alkyl or aralkyl and R_2 is hydrogen or acyl. These compounds are useful as anti-inflammatory agents.

3,692,781
RECOVERY OF PURE CEPHALEXIN FROM ACIDIC REACTION MIXTURES

John Francis Oughton, Gerrards Cross, England, assignor to Glaxo Laboratories Limited, Middlesex, England

Filed Feb. 26, 1971, Ser. No. 119,398
Claims priority, application Great Britain, March 11, 1970,
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 5 Claims

Cephalexin is obtained in a high state of purity and in an advantageous crystalline form from impure solutions by contacting such solutions with acetonitrile, adjusting the pH to near the isoelectric point to cause an acetonitrile solvate of cephalexin to crystallize and suspending said solvate in warm water.

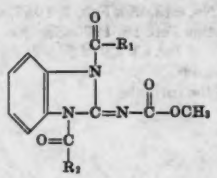
3,692,782
Patent Not Issued For This Number

3,692,783
CERTAIN 2-BENZIMIDAZOLE CARBAMATES AND THEIR UTILITY

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,753
Int. Cl. C07d 49/38
U.S. Cl. 260—240 J 3 Claims

New compounds corresponding to the formula



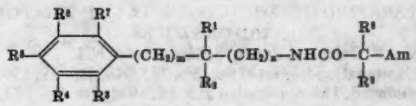
wherein R_1 and R_2 can be the same or different and are selected from alkyl, aryl, haloalkyl, cycloalkyl, alkenylaryl, and furanyl. The compositions described herein are useful as fungicides and biocides.

3,692,784
N-(PHENYLALKYL)-ACYLAMIDE DERIVATIVES

Ulf Henrik Anders Lindberg, Sodertalje, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden

Filed July 1, 1969, Ser. No. 838,313
Claims priority, application Great Britain, July 16, 1968, 33,867/68
Int. Cl. C07c 103/50
U.S. Cl. 260—247.2 12 Claims

Compounds of the formula



wherein R^1 and R^2 may be the same or different and selected form the class consisting of alkyl groups of one to three carbon atoms, including isopropyl, R^3, R^4, R^5, R^6 and R^7 may be the same or different and each selected from the class consisting of a hydrogen atom, straight and branched alkyl groups of one to three carbon atoms, straight and branched alkoxy groups of one to three carbon atoms and halogen atoms, at least two of R^3, R^4, R^5, R^6 and R^7 being hydrogen and at least one of R^3 and R^7 being hydrogen when *m* is O; R^8 and R^9 may be the same or different and each selected from the class consisting of a hydrogen atom and straight and branched alkyl groups of one to three carbon atoms, or when R^8 is hydrogen R^9 may together with Am form a heterocyclic ring containing a nitrogen atom; Am is an amino group selected from the class consisting of pyrrolidino, piperidino, morpholino and monoalkylamino and dialkylamino groups in which the alkyl radicals are straight or branched and contain one to four carbon atoms; *m* and *n* is 0 or 1, at least one of *m* and *n* being 0; and therapeutically acceptable salts thereof, processes for their preparation, pharmaceutical preparations containing such compounds and their use as local anesthetics.

3,692,785
Patent Not Issued For This Number

3,692,786

Patent Not Issued For This Number

3,692,787

SUBSTITUTED 2,4-DIAMINO-5-BENZYL PYRIMIDINES

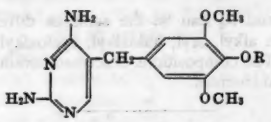
Barbara Roth, Scarsdale, and Justina Strelitz, Dobbs Ferry, both of N.Y., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

Division of Ser. No. 613,450, Feb. 2, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 14,852

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N 6 Claims

Compounds of the formula



where R is benzyl, alkoxy substituted benzyl, allyl, or halogenalkyl. The compounds are useful as antibacterial agents.

3,692,788

PIPERAZINO HENZOCYCLOHEPTA 1,2 D THIAZOLES AND OXAZOLES

Eugene E. Galantay, Route 18, Morristown, N.J.

Continuation-in-part of Ser. No. 795,048, Jan. 29, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,521

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR 7 Claims

The compounds are 2-alkyl-4-(4'-substituted-1'-piperazinyl-9,10-dihydro-4H-benzo[5,6]cycloheptа[1,2-d]oxazoles and thiazoles; the substituents being methyl, ethyl or 2-hydroxyethyl, e.g., 2-methyl-4-(4'methyl-1'-piperazinyl)-9,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-d]oxazole. The compounds are useful therapeutically as anti depressants and tranquillizers.

3,692,789

METHOD FOR PREPARATION OF AMINOETHYLPIPERAZINE

Myrl Lichtenwalter, and Ernest Leon Yeakey, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Oct. 24, 1969, Ser. No. 869,345

Int. Cl. C07d *51/64*

U.S. Cl. 260—268 SY 4 Claims

This invention relates to a method for the preparation of an amine, namely, 1-(2-aminoethyl)piperazine from a mixture of N-(hydroxyethyl)diethylene triamine isomers formed by the reaction of ethylene oxide with diethylenetriamine. Aminoethylpiperazine is a useful curing agent for epoxy resins and may also be used as a chemical intermediate (e.g., for the preparation of triethylenediamine).

3,692,790

5-(AMINOALKYLAMINO)-6(OR)-HALO-8-QUINOLINEMETHANOLS, THEIR ALKYL ETHERS AND ALKANOYL ESTERS

Sydney Archer, Bethlehem, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 690,795, Dec. 15, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 882,723

Claims priority, application Great Britain, Dec. 9, 1968, 58,462/68

Int. Cl. C07d *33/54*

U.S. Cl. 260—287 R 5 Claims

5-(Aminoalkylamino)-6(or 7)-halo-8-quinolinemethanols, their lower-alkyl ethers and lower-alkanoyl esters, having schistosomacidal activity, are prepared by reducing the corresponding lower-alkyl 5-(aminoalkylamino)-6(or 7)-halo-8-quinolinecarboxylates to prepare said 8-quinolinemethanols, and then reacting the latter with a lower-alkanol in the presence of an acid to obtain the lower-alkyl ethers and reacting the 8-quinolinemethanols with a lower-alkanoylating agent, e.g., acid chloride or anhydride, to form their lower-alkanoate esters.

3,692,791

SUBSTITUTED 2-T-BUTYL-OCTAHYDRO-2H-QUINOLIZINES

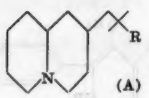
John R. Potoski, Rosemont, and Meier E. Freed, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,508

Int. Cl. C07d *39/12*

U.S. Cl. 260—293.53 6 Claims

The disclosure is directed to 2-t-butyl-octahydro-2H quinolizines substituted in the two position and having the following formula:



(A)

Where R is as defined below. The disclosure is further directed to a process for the preparation of such compounds and to novel intermediates in their preparation. The compounds have pharmacological activity as central nervous system depressants and some are useful as hypotensives.

3,692,792

HALOPYRIDINE SULFENYL-AND SULFONYLHALIDES

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 861,463, Sept. 26, 1969, Pat. No. 3,635,994. This application May 20, 1971, Ser. No. 145,507

Int. Cl. C07d *31/50*

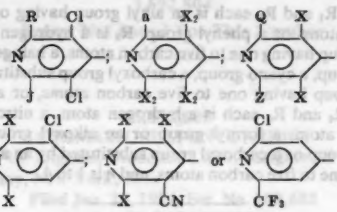
U.S. Cl. 260—294.8 G 2 Claims

This disclosure is directed to sulfur containing substituted pyridine compounds corresponding to the formula

Py — M — D

wherein D represents chlorine, bromine or fluorine; M represents sulfenyl (—S—) or sulfonyl

and Py represents one of the substituted pyridyl radicals



in which X_1 represents bromine or fluorine; X represents chlorine or X_2; a represents hydrogen or X_2; R represents hydrogen or X; J represents trichloromethyl, trifluoromethyl or R; Q represents methyl sulfonyl

or R and Z represents cyano (—CN) or methyl sulfonyl, with the proviso that D is fluorine only when M is sulfonyl. The preparation and use of these compounds as pesticides is also disclosed.

3,692,793

2,4-PYRIDINEDIYL BENZENESULFONATES

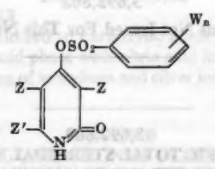
Chun-Shan Wang, 1906 Burlington, and Thomas W. McGee, 615 Columbia, both of Midland, Mich.

Division of Ser. No. 807,961, March 17, 1969, Pat. No. 3,591,596. This application Nov. 19, 1970, Ser. No. 91,142

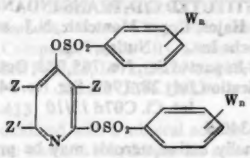
Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 F **4 Claims**

The invention relates to halogenated 6-methyl-4-pyridyl and 6-methyl-2,4-pyridinediyl esters of benzenesulfonic acid of the formulas



and



wherein each Z is hydrogen or X; X is chlorine, bromine or iodine; Z′ is $—CH_3$, $—CH_2X$, $—CHX_2$ or $—CX_3$; W is a member selected from the group consisting of halogen, nitro and cyano and n is an integer of from 0 to 5, inclusive. The compounds of the invention are particularly useful as fungicides.

3,692,794

1,2,4-THIADIAZOLES

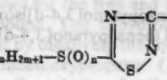
Melvin Harris Rosen, Florham Park, N.J., and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation

Filed Sept. 3, 1970, Ser. No. 69,469

Int. Cl. C07d 91/60

U.S. Cl. 260—302 SD **6 Claims**

New 5-sulfinyl- or sulfonyl-1,2,4-thiadiazoles, e.g. those of the formula



R = H or an aliphatic or araliphatic radical
$n = 1$ or 2
$m = 1–7$
and salts thereof are antifungal agents.

3,692,795

3-AMINO-ISOTHIAZOLES, DERIVATIVES THEREOF AND PROCESSES FOR THE PRODUCTION THEREOF

Horst Boshagen, Haan, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 12, 1969, Ser. No. 857,580

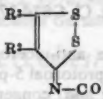
Claims priority, application Germany, Sept. 17, 1968, P 17 95 344.5

Int. Cl. C07d 91/46

U.S. Cl. 260—305 **6 Claims**

3-Amino-isothiazoles and derivatives thereof of the formula:

or a salt thereof, wherein R^2 and R^3 are the same or different and are hydrogen, unsubstituted or substituted aralkyl, unsubstituted or substituted aryl or an unsubstituted or substituted aliphatic moiety, or R^2 and R^3 are both alkyl linked together to form an anellated five- to seven-membered unsaturated or saturated, unsubstituted or substituted ring system, X is hydrogen or $—CO—R^1$, and R^1 is unsubstituted or substituted aralkyl, unsubstituted or substituted aryl or an unsubstituted or substituted aliphatic moiety, are produced by reacting a compound of the formula:



wherein R^1, R^2, and R^3 are as above defined, or a salt thereof, with at least a twice-molar quantity of hydroxylamine in the presence of a water-miscible organic solvent at an elevated temperature, and the N-acylamines thus formed are optionally hydrolyzed, optionally without intermediate isolation.

The 3-amino-isothiazoles and derivatives so produced are useful for their fungicidal activity and may be used in treating humans, animals and plants against various fungal infections.

3,692,796

4H[1]BENZOPYRANO[3,4-D]ISOXAZOLE DERIVATIVES

Jules Freedman, 419 Susan Lane, Thiensville, Wis., assignor to Colgate-Palmolive Company New York, N.Y.

Continuation-in-part of Ser. No. 670,772, Sept. 26, 1967, Pat. No. 3,553,228. This application Aug. 27, 1970, Ser. No. 67,603

Int. Cl. C07d 85/22

U.S. Cl. 260—307 H **6 Claims**

4H[1]benzopyrano[3,4-d]isoxazole derivatives substituted in the 3-position which are useful as pharmaceutical agents, especially anti-inflammatory agents. They are also useful in preparing structurally related pharmaceutical compounds of known utility. In addition, they are useful as intermediates in the preparation of wood preservatives, mothproofing agents and pickling inhibitors. Representative of the compounds disclosed are 4H[1]benzopyrano [3,4-d]isoxazole-3-carboxa-

mide, ethyl 4H[1]benzopyrano[3,4-d]isoxazole-3-carboxylate and N-methyl-4H[1]benzopyrano[3,4-d]isoxazole-3-thiocarboxamide.

3,692,797

3-(5-NITRO-2-THIENYL)-1-OXA-2,4-DIAZASPIRO(4,5)-DEC-2-ENE

Rudolf Ruegg, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 26, 1971, Ser. No. 128,571

Claims priority, application Switzerland, April 24, 1970, 6171/70

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 F **1 Claim**

3-(5-Nitro-2-thienyl)-1-oxa-2,4-diazaspiro[4,5]-dec-2-ene and a process for its preparation are described. The subject compound is therapeutically active against filariasis schistosomasis and similar diseases.

3,692,798

SUBSTITUTED SILYLMETHYL IMIDAZOLES

Sandor Barcza, 1480 Pleasant Valley Way, West Orange, N.J.

Filed May 7, 1971, Ser. No. 141,383

Int. Cl. C07d *49/36*; C07f *7/10*

U.S. Cl. 260—309 **5 Claims**

Substituted silylmethyl imidazoles, e.g., 1-(phenyldimethyl-silylmethyl)-imidazole, are prepared by reacting substituted silylmethyl halides with imidazole or N-metalated imidazole, and are useful as antimicrobials.

3,692,799

5-PHENYL-1-SULFONAMIDOPYRROLE-2-PROPIONIC ACIDS AND CONGENERS

William K. Sprenger, 8860 Root St. Apt. 1, Niles, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 8, 1970, Ser. No. 53,335

Int. Cl. C07d *27/26*

U.S. Cl. 260—326.3 **21 Claims**

Disclosed herein are anti-ulcerogenic, pepsin-inhibiting, anti-bacterial, and anti-protozoal 5-phenyl-1-sulfonamidopyrrole-2-propionic acids and congeners; analgesic, anti-ulcerogenic, and anti-protozoal 2,3,4,5-tetra-hydro-3-hydroxy-6-phenyl-2-sulfonylpyridazine-3-propionic acid γ-lactones and congeners; and the preparation of these compounds from corresponding 4,7-dioxoheptanoic acids and sulfonic acid hydrazides.

3,692,800

PHOTOCHROMIC COMPOUND

Hisatake Ono, and Chiaki Osada, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigaro-Kamigun, Kanagawa, Japan

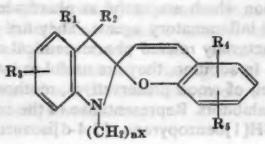
Filed Oct. 30, 1969, Ser. No. 872,604

Claims priority, application Japan, Oct. 30, 1968, 43/79152

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **6 Claims**

The present invention relates to a photochromic compound represented by the formula



wherein R_1 and R_2 each is an alkyl group having one to five carbon atoms or a phenyl group, R_3 is a hydrogen atom, an alkyl group having one to five carbon atoms, a halogen atom, a nitro group, a cyano group, a carboxyl group substituted by an alkyl group having one to five carbon atoms, or an alkoxyl group, R_4 and R_5 each is a hydrogen atom, a nitro group, a halogen atom, a formyl group or an alkoxyl group, X is a cyano group or a carboxyl group substituted by an alkyl group having one to five carbon atoms, and n is 1 to 4.

3,692,801

2-ALKYLIDENE OXETANE COMPOUNDS

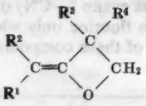
Alfred G. Robinson, III, 501 W. Terrace Dr., and Anthony W. McCollum, 404 Hillmont, both of Longview, Tex.

Filed Sept. 16, 1970, Ser. No. 72,839

Int. Cl. C07d *3/00*

U.S. Cl. 260—333 **11 Claims**

Polymerizable unsaturated oxetane compounds having the structure:



wherein R^1, R^2, R^3 and R^4 are selected from the group consisting of methyl or ethyl have been discovered. They may be prepared in high yield by reacting a suitable base, preferably potassium t-butoxide with a substituted 3-oxobutylene or 3-oxopentylene compound such as, for example, 2,2,4-trialkyl-3-oxopentyl tosylate or 2,2,4-trialkyl-3-oxopentyl isobutyrate in an inert organic solvent, preferably benzene. Polymers and copolymers are prepared from the oxetane compounds.

3,692,802

Patent Not Issued For This Number

3,692,803

STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

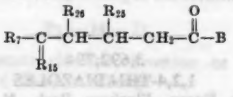
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 765,023, Oct. 4, 1968. This application July 28, 1969, Ser. No. 845,546

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **5 Claims**

Progestationally active steroids may be prepared by first reacting 4-active group substituted C/D trans indanones with substituted β-keto esters followed by cyclization to B,C,D-tricyclics having an A ring precursor group and then finally forming the desired steroid. Preferred β-keto esters for this purpose have the formula



where R_7 is lower alkyl; R_{15} is oxo, lower alkylene-dioxy, arylenedioxy or (hydrogen and lower alkoxy); B is lower alkoxy-carbonyl-methylene, aryloxy-carbonyl-methylene, cyano-methylene, lower alkyl sulfinyl-methylene, and lower alkyl sulfonyl-methylene; and R_{25} and R_{26} are independently selected from the group consisting of hydrogen, hydroxyl and lower alkyl.

3,692,804

Patent Not Issued For This Number

3,692,805

AROMATIC SULFONYL AZIDES

Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,681
Int. Cl. C07d *109/00*
U.S. Cl. 260—349 6 Claims

Certain novel 4-amino-3,5-dinitrobenzenesulfonyl azides are described, with their preparation and use as herbicides.

3,692,806

Patent Not Issued For This Number

3,692,807

Patent Not Issued For This Number

3,692,808

Patent Not Issued For This Number

3,692,809

CATALYST SYSTEM FOR USE IN NITRIC ACID OXIDATION OF OLEFINS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1971, Ser. No. 117,793
Int. Cl. C07c *51/32*
U.S. Cl. 260—413 11 Claims

Olefins are oxidized to carboxylic acids by contacting the olefins in the liquid phase with nitric acid in the presence of a catalyst consisting of vanadium and silver ions.

3,692,810

CATALYTIC OXIDATION OF OLEFINS TO YIELD CARBOXYLIC ACIDS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1971, Ser. No. 117,794
Int. Cl. C07c *51/32*
U.S. Cl. 260—413 11 Claims

Olefins are oxidized with a mineral acid to carboxylic acids by dissolving the olefin in a hydrophobic solvent, and contacting the olefin solution with an oxidation system which comprises a mineral acid, an aqueous solution of a hexavalent chromium compound and a ruthenium compound. The reaction mixture is heated to a temperature of from about 45° C to about 100° C.

3,692,811

ALCOHOLATED BASIC ALUMINUM HALIDE COMPOUNDS AND METHOD OF MAKING SAME

William S. Gilman, South Plainfield; John L. Jones, North Plainfield, and Andrew M. Rubino, New Providence, all of N.J., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed Oct. 26, 1970, Ser. No. 84,172
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 R 8 Claims

Anhydrous basic aluminum halide complexes may be formed from hydrated or partially hydrated aluminum halides by substituting alcohol for the free and coordinated water in the hydrated compound. The anhydrous alcoholated complexes are produced by dissolving the hydrated compound in alcohol, adding dimethoxypropane (DMP) or diethoxypropane (DEP) to the solution, heating and concentrating the solution, adding additional DMP, DEP or other precipitating agent to precipitate out the alcoholated complex, and drying the precipitate. The products may be useful in antiperspirant compositions and as intermediates in non-aqueous solvents.

3,692,812

METHOD OF PRODUCING ALKOXY-SUBSTITUTED MERCAPTOALKYL SILANES

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 789,401, Jan. 6, 1969, abandoned. This application April 21, 1971, Ser. No. 136,259
Int. Cl. C07f *7/08, 7/10, 7/18*
U.S. Cl. 260—448.2 E 10 Claims

Alkoxy-substituted mercaptoalkyl silanes are prepared by reacting an olefinically substituted silane with a thioacid and treating the reaction product with an alcohol so as to form or maintain an alkoxy substituent, while forming a mercaptoalkyl substituent of the original olefinic portion. The process is also applicable to the production of polymeric organosilicon materials with mercaptoalkyl substituents.

3,692,813

STABILIZATION OF ORGANIC ISOCYANATES

Hermann Hagemann, Cologne-Flittard; Erwin Muller, Leverkusen, and Peter Fischer, Odenthal-Osenau, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 2, 1970, Ser. No. 402
Claims priority, application Germany, Jan. 7, 1969, P 19 00 513.1
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 SP 3 Claims

Organic isocyanates are stabilized against decomposition, which results in precipitate formation and discoloration, by the addition of a small amount of an organic isocyanate compound, preferably an oxycarbonyl isocyanate containing at least one —O—CO—NCO group in the molecule. Polyurethane elastomers prepared from isocyanates stabilized in this manner also exhibit a very high resistance to hydrolysis.

3,692,814

PREPARATION OF DIPERCHLORATES FROM DIENES AND DIOLS

David M. Hoffman, Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 24,390, March 31, 1970. This application Aug. 21, 1970, Ser. No. 66,051
Int. Cl. C07c *71/00*
U.S. Cl. 260—453 R 18 Claims

Hydrocarbon diperchlorates are prepared by contacting certain kinds of feed reactants with perchloric acid in an emulsion comprising a strong sulfuric acid phase and an organic phase comprising an inert organic solvent. The feed reactants can be alkadienes, cycloalkadienes, diols of alkanes or cycloalkanes, and monools of alkenes or cycloalkenes, with certain restrictions on the proximity of the reactive positions. The perchloric acid can be generated in situ in the mixture by

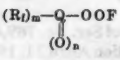
reaction of a perchlorate metal salt with the sulfuric acid. The hydrocarbon diperchlorate products have utility as detonatable sensitizers for explosives and as alkylating agents.

3,692,815
FLUOROXIDANTS

Phillip G. Thompson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 20, 1964, Ser. No. 339,026
Int. Cl. C07c 71/00, 73/00
U.S. Cl. 260—453 R 3 Claims

1. A compound of the formula



wherein Q is an atom in its highest oxidation state, said atom being selected from the class consisting of carbon and phosphorus, R_f is selected from the class consisting of fluorine and perfluoroalkyl radicals, m is 1–5 and n is zero to 2; and when Q is carbon and n is zero, R_f is perfluoroalkyl and includes Q.

2. Trifluoromethyl peroxyfluoride having the formula

CF_3OOF.

3,692,816
ORGANOMINERAL POLYMERIC MATERIAL

Marc della Faille, 27 Rue Baron De Castro, Bruxelles 1040; Jose Fripiat, 42 De Croylaan, Heverlee, Louvain, and Jean Mercier, Trolleberg 31, Kessel-Lo, all of Belgium

Filed Oct. 26, 1970, Ser. No. 84,120
Claims priority, application France, Nov. 6, 1969, 6932816
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 R 9 Claims

The material comprises a siliceous mineral framework constituted by the two-dimensional framework of a phyllosilicate and organic radicals having a reactable group which is capable of polymerization, the radicals being linked by Si-O-Si siloxane bonds to the tetrahedral layer of the phyllosilicate from which a fraction of the octahedral layer has been removed. The method of preparation of the material comprises acid hydrolysis of a phyllosilicate for the partial removal of the octahedral layer followed by reaction of the phyllosilicate with an organosilane having at least one reactable organic group which is capable of subsequent polymerization.

3,692,817

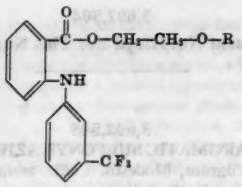
Patent Not Issued For This Number

3,692,818
NEW PHARMACOLOGICALLY ACTIVE ESTERS OF N-(3-TRIFLUOROMETHYLPHENYL)-ANTHRANILIC ACID

Karl-Heinz Boltze, Bensberg-Kippekausen; Otfried Brendler, Cologne, Mulheim, and Dietrich Lorenz, Bensberg, all of Germany, assignors to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany

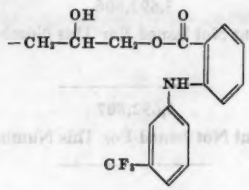
Filed July 16, 1970, Ser. No. 55,563
Claims priority, application Germany, Aug. 1, 1969, P 19 39 112.9
Int. Cl. C07c 101/54
U.S. Cl. 260—471 R 7 Claims

Compounds of the general formula:



(I)

in which R represents the radical



II

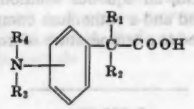
or a lower alkyl group having up to three carbon atoms in which one or two hydrogen atoms are replaced by hydroxyl groups, acyloxy groups having up to four carbon atoms, or lower hydroxyalkoxy groups, having an antiflammatory action.

3,692,819
TERTIARY AMINOACIDS

Richard William James Carney, New Providence, N.J., and George De Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation

Continuation-in-part of Ser. No. 808,331, March 18, 1969, which is a continuation-in-part of Ser. No. 792,807, Jan. 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, July 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Sept. 29, 1969, Ser. No. 861,984
Int. Cl. C07c 101/44
U.S. Cl. 260—471 R 8 Claims

New α-(acyclic tert. aminophenyl)-aliphatic acids, e.g., those of the formula



R_1 = H or alkyl
R_2 = H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl
R_3 = alk(en)yl, hydroxyalkyl, alkoxyalkyl or aminoalkyl
R_4 = alk(en)yl, hydroxyalkyl, alkoxyalkyl, cycloalk(en)yl, cycloalk(en)yl-alkyl or aralkyl

and functional derivatives thereof, are anti-inflammatory agents.

3,692,820

METHYL AND ETHYL-N-[3-(3'-METHYLPHENYL-CARBAMYLOXY)-PHENYL]CARBAMATES

Gerhard Boroschewski; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany

Continuation of Ser. No. 536,283, March 22, 1966, abandoned. This application Sept. 25, 1969, Ser. No. 861,198
Claims priority, application Germany, April 9, 1965, Sch 36854
Int. Cl. C07c *79/46*, *101/00*
U.S. Cl. 260—472 2 Claims

New phenyl carbamates are provided as herbicides, broadly effective against many types of weeds, particularly of the dicotyledenous type.

3,692,821

DERIVATIVES OF 2-ALKANOYLOXY AND 2-HYDROXY-3-PHENYLBENZOIC ACID

Lewis H. Sarett, Rolling Hill Road, Skillman, N.J., and William V. Ruyle, 1481 Rahway Road, Scotch Plains, N.J.

Continuation-in-part of Ser. No. 674,702, June 10, 1967, abandoned. This application Sept. 9, 1970, Ser. No. 70,893
Int. Cl. C07c *65/14*
U.S. Cl. 260—473 R 3 Claims

New phenyl benzoic acid and ester compounds particularly substituted 5-(substituted phenyl)benzoic acid and ester derivatives and processes for their preparation are claimed. The new phenyl benzoic acid and ester compounds described have anti-inflammatory, anti-pyretic and analgesic activity.

3,692,822

PROCESS FOR PREPARING ESTERS

Russell G. Hay, Gibsonia; John G. McNulty, and William L. Walsh, both of Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed April 20, 1970, Ser. No. 30,235
Int. Cl. C07c *69/02*, *69/34*, *69/8 0*
U.S. Cl. 260—475 R 13 Claims

A process for preparing an ester wherein a water soluble organic acid is contacted with a water insoluble alkanol in added water containing a sulfonic acid having from 12 to 20 carbon atoms.

3,692,823

METHOD FOR PREVENTING EXPLOSIONS

William E. Gordon, Pittsburgh, Pa., assignor to Celanese Corporation of America, New York, N.Y.

Division of Ser. No. 514,653, Dec. 17, 1965, abandoned. This application Feb. 16, 1970, Ser. No. 14,855
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A 2 Claims

In a process in which a gas comprising oxygen is bubbled through a liquid reaction medium contained in a reaction vessel, with a flammable or potentially flammable vapor being contained in the ullage space of the vessel with a resultant explosion hazard, the explosion hazard is minimized by continuously spraying a liquid comprising predominantly at least one component of the reaction medium into the ullage space so as to maintain a suspension of liquid droplets throughout the ullage space.

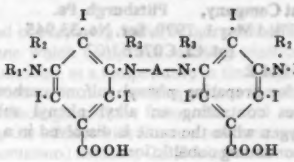
3,692,824

NOVEL 3,5-SUBSTITUTED 2,4,6-TRIIODOBENZOIC ACIDS AND SALTS THEREOF

Lars Bjork, Uno E. Erikson, and Bjorn G.-A. Ingelman, all of Uppsala, Sweden, assignors to Pharmacia Aktiebolog, Uppsala, Sweden

Continuation-in-part of Ser. No. 689,724, Dec. 11, 1967, abandoned. This application April 10, 1970, Ser. No. 27,437
Claims priority, application Sweden, Dec. 13, 1966, 17053/1966
Int. Cl. C07c *103/32*
U.S. Cl. 260—501.11 12 Claims

Iodo compounds useful in the X-ray visualization of body cavities, of the formula:



wherein R_1 is methyl or ethyl and R_2 and R_3 are each acetyl or propionyl and wherein A is an alkylene group substituted by at least one hydroxy group, said alkylene containing from three to 15 carbon atoms and being optionally broken by one or more oxygen bridges; or physiologically acceptable salts of said compounds.

3,692,825

INDANYL ACETIC ACIDS

John B. Conn, 2417 Allwood Road, Westfield, N.J., assignor to Merch & Co., Inc., Rahway, N.J.

Filed May 1, 1970, Ser. No. 33,893
Int. Cl. C07c *147/00*
U.S. Cl. 260—515 A 2 Claims

Process for preparing 1-benzylidene-5-fluoro-3-indenyl acetic acids by 2,3-dehydrogenating a 1-benzylidene-3-indanyl acetic acid. Also included are novel 1-benzylidene-3-indanyl acetic acid intermediates.

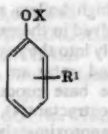
3,692,826

CARBOXYLATION OF FLUORENE

Edwin L. Patmore; William R. Siegart, and Harry Chafetz, all of Texaco Inc. P.O. Box 509, Beacon, N.Y.

Division of Ser. No. 784,901, Dec. 18, 1968, Pat. No. 3,595,907. This application Feb. 3, 1971, Ser. No. 119,430
Int. Cl. C07c *51/00*
U.S. Cl. 260—515 R 4 Claims

Method of carboxylating a compound of the group of R-C≡CH, RCH_2CN, indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.

3,692,827

DERIVATIVES OF AMINOALKANOIC ACIDS

Aldo Garzia, Lodi, Italy, assignor to Instituto Chemioterapico Italiano S.P.A., Milan, Italy

Filed June 26, 1970, Ser. No. 50,329
Int. Cl. C07c 103/22
U.S. Cl. 260—519 7 Claims

(3,4,5-trialkoxy benzoyl) amino alkanoic acids and their pharmaceutically-acceptable salts for prophylaxis and treatment of cardiac disorders.

3,692,828

PROCESS FOR PREPARING PHENYL SULFONE CARBOXYLIC ACIDS

Antoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 1, 1970, Ser. No. 33,945
Int. Cl. C07c 63/02
U.S. Cl. 260—524 R 8 Claims

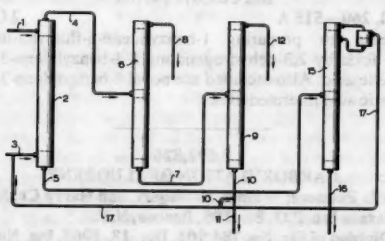
A process for preparing phenyl sulfone carboxylic acids which involves contacting an alkyl phenyl sulfone with molecular oxygen while the same is dissolved in a lower carboxylic acid containing cobaltic ions.

3,692,829

PROCESS FOR ISOLATING ACRYLIC ACID FROM AQUEOUS CRUDE ACRYLIC ACID BY EXTRACTION WITH A KETONE AND PLURAL STAGE DISTILLATION

Kurt Sennewald, Hermulheim near Cologne; Heinz Erpenbach, Surth near Cologne; Heinz Handte, Cologne, and Winfried Lork, Friesheim, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Dec. 15, 1970, Ser. No. 98,336
Claims priority, application Germany, Dec. 27, 1969, P 19 65 014.7
Int. Cl. C07c 57/04, 51/48
U.S. Cl. 260—526 N 6 Claims



Pure acrylic acid is isolated from an aqueous crude acid containing acrylic acid together with minor proportions of acetic acid, formaldehyde and high boilers boiling at a temperature higher than 220°C by liquid-liquid extraction with the use of 3,3,5-trimethylcyclohexanone and/or isophorone as the extractant(s). To this end, the aqueous acrylic acid-containing crude acid is subjected in an extraction zone to counterflow extraction with the use of the extractant(s) and with the resultant formation of an organic extract containing acrylic acid, acetic acid, high boilers and minor proportions of water, which are dissolved in the extractant; the extract is introduced approximately into the midsection of a first distilling column; acetic acid and water are removed overhead under reduced pressure; the base product of the first distilling column, containing extractant(s), acrylic acid and high boilers, is delivered approximately to the midsection of a second distilling column; pure acrylic acid is distilled off overhead under reduced pressure; and the base product of the second distilling column, consisting of high boilers and extractant(s), is recycled to the extraction zone.

3,692,830

PROCESS FOR THE PRODUCTION OF OXALIC ACID

Andre Charamel; Jacques Marius Duroux, both of Lyon; Serge Siquet, Chaponost (Rhone), all of France, and Jaques Descroix, deceased, Thiais, France (by Daniel Gras, Legal Representative), assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 624,973, March 14, 1967. This application Dec. 9, 1970, Ser. No. 96,646
Int. Cl. C07c 51/32
U.S. Cl. 260—533 R 7 Claims

Oxalic acid is produced by absorbing propylene in strong nitric acid and then heating the solution while removing the oxides of nitrogen formed, preferably after introducing oxygen into the solution.

3,692,831

COUNTER-CURRENT CYCLING EXTRACTION

Chandrasekhara Rao Darsi, John Edwin Feick, both of Edmonton, Alberta, and Isa Christopher Mustaklem, St. Albert, Alberta, all of Canada, assignors to Chemcell Limited, Montreal, Quebec, Canada

Filed Oct. 6, 1969, Ser. No. 863,879
Int. Cl. C07c 51/48
U.S. Cl. 260—541 4 Claims

A counter-current cycling extraction method wherein a light solvent upward stream extracts a solute from a heavy solvent downward stream, the improvement which comprises during the circulation of said light solvent upward stream simultaneously circulating an upward stream of the heavy solvent whose solute has been removed at least in part by extraction, the amount of said heavy solvent thus circulated corresponding substantially to the volume increase of the light solvent stream due to the solute transfer, thereby maintaining during the cycling extraction the volume of heavy solvent stream constant and generally enabling a constant volume flow of the light solvent stream and apparatus therefore, comprising a cycling extraction column provided with compensating means for feeding a controlled amount of solvent having reduced solute concentration into the base of said extraction column during the flow of the light solvent.

3,692,832

METHOD FOR THE PRODUCTION OF SUBSTITUTED CYANAMIDES

Harold D. Rider, 26 South Cherman, Denver, Colo.

Filed Aug. 4, 1967, Ser. No. 663,186
Int. Cl. C07c 125/08
U.S. Cl. 260—551 C 9 Claims

The present invention comprises a process for the production of mono- and disubstituted cyanamides comprising contacting cyanamide with an organic mono-halide in a dipolar aprotic solvent at a temperature of about 0° to 200° C.

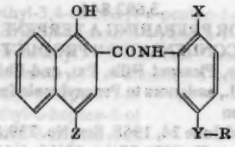
3,692,833

PHOTOGRAPHIC COLOR COUPLERS

Alberto Guzzi, Viale Della Liberta, and Remo Magagnoli, Via Gramsci, both of Ferrania, Italy

Division of Ser. No. 701,995, Jan. 31, 1968, Pat. No. 3,591,384. This application Aug. 27, 1970, Ser. No. 67,569
Claims priority, application Italy, Feb. 15, 1967, 34846 A/67
Int. Cl. C07c 103/30
U.S. Cl. 260—559 S 5 Claims

This invention relates to compounds useful as photographic couplers having the general formula:



wherein X is alkyl, Y is either carbonyl or sulfonyl, R is alkyl having from five to 20 carbon atoms and Z is hydrogen or halogen. The invention also relates to the use of the above-mentioned compounds in photographic emulsions.

3,692,834

INTERMEDIATES FOR PREPARING ACRIDINES

Elvin L. Anderson, Moorestown, N.J., and Harold Graboyes, Philadelphia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 732,869, May 29, 1968, Pat. No. 3,625,945. This application Feb. 25, 1971, Ser. No. 118,976

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B 4 Claims

Diphenyl-2-carboxaldehyde derivatives, prepared by reacting a diphenylamine-2-carboxylic acid benzenesulfonyl-hydrazide with a base and hydrazine, semicarbazide, thiosemi-carbazide or phenylhydrazine, are reacted with a mineral acid to produce acridines. The acridines are useful as intermediates for preparing 9-aminoalkylacridans having pharmacodynamic activity.

3,692,835

PHARMACOLOGICALLY ACTIVE AMINO-ETHYL OXIMES

Jan Van Dijk, and Jenkin Eric Davies, both of van Houtenlaan, Weesp, Netherlands

Filed March 25, 1968, Ser. No. 715,571

Claims priority, application Netherlands, April 5, 1967, 6704810; Dec. 4, 1967, 6717001

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 AE 5 Claims

Certain substituted amino-ethyl oximes such as 0-(2-amino-ethyl)-4'-methoxy acetophenone oxime and 0-2(amino-ethyl)-2'chlorohexano-phenone oxime have been found to exhibit antidepressive activity.

3,692,836

1-(2-HYDROXY-3-AMINO-PROPOXY-9-FLUORENONES AND THE SALTS THEREOF

Franz Troxler, 39 Drosselstrasse, 4103, Bottmingen, and Fritz Seemann, 52 Spalenring, 4000, Basel, both of Switzerland

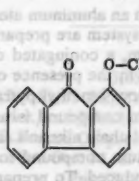
Filed May 27, 1970, Ser. No. 41,057

Claims priority, application Switzerland, June 3, 1969, 8402/69

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 5 Claims

The invention concerns novel compounds of the formula:



wherein R is methyl, ethyl, isopropyl, sec.butyl, tert.butyl, tert.pentyl, 3-pentyl, cyclopropyl, cyclobutyl, 3-cyanopropyl, 3-phenyl propyl, or adamantyl.

The compounds are useful β-blocking agents and furthermore inhibit platelet aggregation.

3,692,837

1-TRIS(DIFLUOR-AMINO)METHOXY-2,2,2-TRINITROETHANE

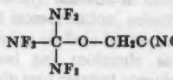
Lawrence J. Engel, Denellen; Michael H. Gianni, Roselle, and Charles Wiener, Linden, all of N.J., assignors to Esso Research and Engineering Company

Filed Sept. 19, 1963, Ser. No. 310,972

Int. Cl. C07c *93/12*

U.S. Cl. 260—584 C 3 Claims

1. The compound 1-tris(difluoramino)methoxy-2,2,2-trinitroethane having the formula:



2. Method of preparing 1-tris(difluoramino)methoxy-2,2,2-trinitroethane which comprises reacting trinitroethanol with perfluoroguanidine at a temperature in the range of 0° to 150° C. for a period to form a resulting adduct thereof, separating excess perfluoroguanidine from the said adduct, then fluorinating the adduct with fluorine and recovering resulting 1-tris(difluoramino) methoxy-2,2,2-trinitroethane product.

3,692,838

PROCESS FOR PREPARING SALTS OF TRIS(DIFLUORAMINO)METHOXY ALKYL AMINES

Robert L. Rebertus, Mendota Heights, and Richard P. Fields, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1965, Ser. No. 426,692

Int. Cl. C07c *93/02*

U.S. Cl. 260—584 C 5 Claims

1. A process for the preparation of salt or water-soluble and alkyl amine substituted 0 1,5 least one tris(difluoramino) methoxy group comprising the steps of

I. distributing said amine from polar solvent into fluorinated solvent, and, thereafter,

II. redistributing said amine into a further portion of polar solvent while incrementally adding said water-soluble acid in total at least equalling the stoichiometric amount.

5. A process according to Claim 1 wherein the amine is ω-[tris(difluoramino)methoxy]undecyl amine and the water-soluble acid is hydrochloric acid.

3,692,839

CONDENSATION PRODUCTS OF α,β-UNSATURATED ALDEHYDES WITH LOWER ALKYL KETONES

Pius Anton Wehrli, 9 Runnymede Gardens, Linn Drive, Verona, N.J.

Filed March 7, 1969, Ser. No. 805,365

Int. Cl. C07c *49/30*, *37/06*, *49/48*

U.S. Cl. 260—586 R 2 Claims

Condensation products of α,β-unsaturated aldehydes with di-lower alkyl ketones and the preparation of 2,3,6-tri-lower alkyl phenols therefrom.

3,692,840

PROCESS FOR PRODUCING ALDEHYDES AND KETONES

Gerassimos Frangatos, c/o Mobil Research and Development Corporation, Paulsboro, N.J.

Continuation-in-part of Ser. No. 476,176, July 30, 1965, abandoned. This application July 16, 1969, Ser. No. 842,366

Int. Cl. C07c *45/16*

U.S. Cl. 260—586 B 7 Claims

The process for converting alcohols of the formula

to organic compounds of the formula

wherein R and R_1 are selected from the group consisting of hydrogen and a hydrocarbon radical which comprises contacting the alcohol at a temperature of from 150° C. to 400° C. in the presence of a free oxygen-containing gas with a crystalline aluminosilicate catalyst having a uniform pore structure and a pore size between about 4 and about 15 Angstrom units containing a metallic cation of a transition metal having more than one valence.

3,692,841

NONHAZARDOUS POLYMERIZATION INITIATORS

Chester M. McCloskey, Altadena, Calif.; Donald E. Rees, Pomona, Calif., and George L. Hoff, Covina, Calif., assignors to The Norar Company, Inc., Azusa, Calif.

Continuation-in-part of Ser. No. 610,208, Dec. 27, 1966, abandoned. This application June 9, 1969, Ser. No. 831,729

Int. Cl. C07c *73/00*

U.S. Cl. 260—610 R 12 Claims

A nonhazardous ketone peroxide composition is disclosed comprising a ketone peroxide, trischloroethyl phosphate and a glycol.

3,692,842

HYDROXYLATION OF AROMATIC COMPOUNDS

Stephen N. Massie, 30 Algonquin Road, Des Plaines, Ill.

Continuation-in-part of Ser. No. 789,383, Jan. 6, 1969, abandoned. This application Feb. 12, 1971, Ser. No. 115,127

Int. Cl. C07c *37/00*

U.S. Cl. 260—613 D 11 Claims

Nuclear hydroxylation of aromatic compounds is effected by treating an aromatic compound with hydrogen peroxide in the presence of a catalyst comprising a metal derivative of a phthalocyanine at hydroxylation conditions.

3,692,843

PERFLUOROVINYL ETHERS

Paul Raphael Resnick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 29, 1971, Ser. No. 129,176

Int. Cl. C07c *43/00*

U.S. Cl. 260—615 A 3 Claims

Compounds of the formula $CF_3O(CF_2O)_nCF_2CF_2OCF=CF_2$, wherein n is 1 to 5, are provided by reacting compounds of the formula $CF_3O(CF_2O)_nCF_2COF$ with hexafluoropropylene epoxide, followed by dehalocarbonylation. The compounds of this invention are polymerizable to polymers which are useful as thermally stable oils and greases.

3,692,844

PROCESS FOR PREPARING A TERPENE PHENOLIC CONDENSATION PRODUCT

Samuel D. Hollis, Pleasant Hills, Pa., and Philip E. Winston, Jr., Union, N.J., assignors to Pennsylvania Industrial Chemical Corporation

Filed June 24, 1968, Ser. No. 739,179

Int. Cl. C07c *37/14, 39/16, 3/18*

U.S. Cl. 260—619 D 2 Claims

A continuous process for preparing a terpene phenolic compound by alkylating phenol with a cyclic terpene in the presence of boron trifluoride, withdrawing a resinous product characterized by its high phenol reactivity and recycling the distilled boron trifluoride and excess phenol.

3,692,845

PURIFICATION OF PHENOL

Zafarullah K. Cheema, Morristown; Pasquale J. Apice, Cresskill, and Edwin D. Little, Convent Station, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 734,219, June 4, 1968, abandoned. This application March 12, 1969, Ser. No. 806,693

Int. Cl. C07c *37/24, 37/08*

U.S. Cl. 260—621 A 8 Claims

This invention relates to the purification of phenol produced by the decomposition of cumene hydroperoxide by heating the phenol with a polyamine compound to remove carbonyl-bearing impurities and then acidifying the phenol to give a product which remains color stable on aging. After the addition of the polyamine compound, the phenol is distilled free of the polyamine compound and the carbonyl-bearing impurities. This distillation can be carried out either before or after the acid is added.

3,692,846

REARRANGEMENT AND DISPROPORTIONATION OF LOWER ALKYL PHENOLS

Gary W. Dalman, and Fred W. Neumann, both of Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 4, 1969, Ser. No. 855,383

Int. Cl. C07c *37/12*

U.S. Cl. 260—621 D 9 Claims

Ortho and para lower alkyl phenols are rearranged and disproportionated by heating the alkyl phenol in the presence of caustic to a temperature of 350° to 420° C. at a pressure of 2000 to 5000 psig, e.g., when heated under the conditions defined ortho cresol yields a mixture of phenol, ortho cresol, para cresol, 2,6-xylenol and 2,4-xylenol.

3,692,847

BRANCHED CHAIN ALKENOLS

Gottfired J. Brendel, Baton Rouge, La., and Lawrence H. Shepherd, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Division of Ser. No. 771,651, Oct. 29, 1968, Pat. No. 3,631,065. This application Oct. 5, 1970, Ser. No. 78,213

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 2 Claims

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organoaluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organoaluminum compound to hydrolysis, one or more olefins may be produced. To prepare branched chain alkenols, the cyclic organoaluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5 membered ring. Thereupon the reaction mixture is subjected to hydrolysis. The following novel compounds were prepared by this procedure:

1-chloromethyl-3,4-dimethyl-4-penten-1-ol
1-chloromethyl-3,3-dimethyl-4-penten-1-ol
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol
1,5,5-trimethyl-6-hepten-1-ol
1,5,6-trimethyl-6-hepten-1-ol
4,5,6-trimethyl-6-hepten-1-ol
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran

3,692,848

PRODUCTION OF ALKENEDIOLS

Herbert Mueller, Frankenthal; Hermann Overwien, and Horst Pommer, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Atiengesellschaft, Ludwigshafen/Rhein, Germany

Filed June 6, 1969, Ser. No. 831,218. The portion of the term of this patent subsequent to April 13, 1988, has been disclaimed.
Int. Cl. C07c *33/02, 31/20*
U.S. Cl. 260—635 R 6 Claims

Production of alkenediols from alkenols in which the hydroxyl group is in the β-position to, or is farther removed from, the double bond and which bear at least one hydrogen atom on at least one carbon atom adjacent to the carbon atoms of the double bond, by reaction with an aldehyde at from 235° to 400°C.

3,692,849

PREPARATION OF ALLYL ALCOHOL FROM BUTYROLACTONE

Donald M. Fenton, 2861 Alden Place, Anaheim, Calif.

Filed Oct. 10, 1969, Ser. No. 865,488
Int. Cl. C07c *33/02*; C08f *3/36*
U.S. Cl. 260—638 R 12 Claims

Allyl alcohol is prepared by contacting butyrolactone with a liquid reaction medium comprising a minor amount of a Group VIII noble metal. The lactone decomposes releasing carbon monoxide and forming allyl alcohol, a useful polymerization monomer.

3,692,850

PROCESS FOR THE PRODUCTION OF 2,4,5-TRICHLOROTOLUENE

Eugene P. Di Bella, Rochelle Park, N.J., assignor to Tenneco Chemicals, Inc.

Filed July 31, 1970, Ser. No. 60,083
Int. Cl. C07c *25/00, 25/04*
U.S. Cl. 260—650 R 2 Claims

Trichlorotoluene that contains at least 75 percent of 2,4,5-trichlorotoluene is prepared by contacting para-chlorotoluene with chlorine in the presence of a chlorination catalyst that is either a metal sulfide or a mixture of a ring-chlorination catalyst and, as co-catalyst, a sulfur compound to form a reaction mixture containing an average of about 3 gram atoms of chlorine per mole and then separating the trichlorotoluene fraction from the reaction mixture.

3,692,851

1-HALO-3,7,7,11,11-PENTAMETHYLDI-AND TRI-ENES

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,764
Int. Cl. C07c *21/02*
U.S. Cl. 260—654 R 3 Claims

Aliphatic quaternary alkyl compounds having unsaturation at C-2,3, C-4,5, and/or C-8,9 and intermediates therefor useful as insect control agents, lubricants, plasticizers and odorants.

3,692,852

SEMI-HOMOGENEOUS LIQUID SUSPENSION CATALYST COMPLEX FOR SELECTIVE HYDROGENATION

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 21, 1970, Ser. No. 39,542
Int. Cl. C07c *5/24, 5/02, 5/14*
U.S. Cl. 260—666 A 4 Claims

A method for preparing a semi-homogeneous liquid suspension catalyst complex containing (1) an organometal compound, (2) at least one of nickel, iron, and cobalt, and (3) at least one of antimony, arsenic, or bismuth; and a process for the double bond isomerization, selective hydrogenation of a feedstock containing olefinic hydrocarbons having more than one double bond per molecule as well as trienes and acetylenes wherein said catalyst complex is utilized.

3,692,853

ZINC ARSENIDE ISOMERIZATION CATALYST AND PROCESS

Gerhard P. Nowack, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 28, 1970, Ser. No. 102,106
Int. Cl. G07c *5/22*
U.S. Cl. 260—666 A 6 Claims

A method for isomerizing olefinic hydrocarbons which employs a zinc arsenide catalyst, the arsenide being present in relation to the zinc in a molal ratio between about 0.33 and 3.0.

3,692,854

CYCLODIMERIZATION PROCESS

Lawrence G. Cannell, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed March 22, 1971, Ser. No. 126,984
Int. Cl. C07c *13/28, 13/06*
U.S. Cl. 260—666 A 7 Claims

Vinylcyclobutanes are prepared by cyclocodimerizing a diene and a monoolefin, in liquid phase solution, in the presence of a catalyst system containing an organo-titanium compound.

3,692,855

Patent Not Issued For This Number

3,692,856

Patent Not Issued For This Number

3,692,857

Patent Not Issued For This Number

3,692,858
CATALYTIC HYDROCRACKING PROCESS FOR DISTILLATION RESIDUES

Charles C. Brewer, Baton Rouge, La., and Charles R. Killian, Baton Rouge, La., assignors to Foster Grant Co. Inc., Leominster, Mass.

Continuation-in-part of Ser. No. 17,901, March 9, 1970, Pat. No. 3,639,495, which is a continuation-in-part of Ser. No. 706,806, Feb. 20, 1968, Pat. No. 3,505,209. This application April 21, 1971, Ser. No. 136,200

Int. Cl. C07c *3/58*; C10g *13/02, 23/02*

U.S. Cl. 260—672 R 20 Claims

A feed stock composed of one or more members of the group consisting of polyalkylbenzenes, indenes, naphthalenes, diphenyls, acenaphthenes, phenanthrenes and aromatic polymeric materials is subjected to hydrocracking by the use of a catalyst which may be a mixture of oxide of molybdenum and cobalt, molybdenum and nickel, or molybdenum, cobalt and nickel, and a carrier, such as alumina.

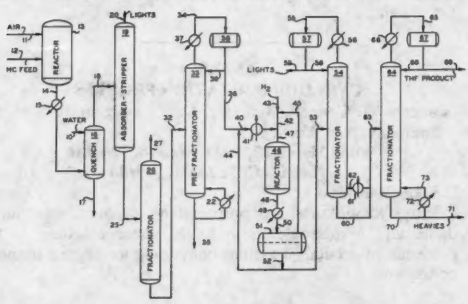
3,692,859
HYDROGENATION OF OXIDATIVE DEHYDROGENATION BY-PRODUCT

John E. Cottle, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed March 13, 1970, Ser. No. 19,265

Int. Cl. C07c *5/18*; C07d *5/02*

U.S. Cl. 260—680 E 5 Claims



A by-product stream containing oxygenated hydrocarbons including furan resulting from hydrocarbon oxidative dehydrogenation processes is upgraded in value and rendered readily separable from residual close-boiling hydrocarbons remaining in the by-product stream by subjecting the by-product stream to hydrogenation to convert furan to tetrahydrofuran and then separating the resulting tetrahydrofuran by fractionation from the hydrogenation effluent.

3,692,860
CYCLICAL PROCESS FOR THE DEHYDROGENATION OF SATURATED HYDROCARBONS

Pierre Boutry, Port Marly; Jean Claude Daumas, Marly Le Roi, and Roger Montarnal, Mareil Marly, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmiason (Hauts de Seine), France

Filed Oct. 21, 1969, Ser. No. 868,205

Claims priority, application France, Oct. 28, 1968, 68171682

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 R 12 Claims

A cyclical process is used to produce an olefinic hydrocarbon from paraffinic hydrocarbons. In the first step, the feed is contacted with a molybdenum-containing metal compound, e. g., iron, cobalt, or nickel molybdate, the step being conducted for a sufficient time to dehydrogenate the paraffinic hydrocarbon and at least partially reduce the molybdate to molybdite. In the second step, the molybdenum compound (at least partially reduced to the state of molybdite) is reoxidized to the molybdate form before it is contacted with additional paraffinic hydrocarbon, this reoxidation step being conducted by contacting the molybdite-containing compound with an oxygen-containing gas, essentially in the absence of paraffinic hydrocarbon. The first and second steps are repeated sequentially.

3,692,861
PROCESS FOR PRODUCING HIGHLY PURE ISOPRENE

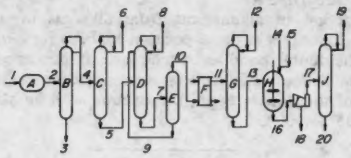
Tatsusuke Chikatsu; Shinichi Shimokawa; Yoshinori Yoshida; Masatugu Imamura; Ituo Nishiwaki; Toshio Akimoto, and Tatuji Fujiwara, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,871

Claims priority, application Japan, Dec. 23, 1970, 45/115731; Feb. 6, 1970, 45/10026

Int. Cl. C07c *7/00*

U.S. Cl. 260—681.5 R 13 Claims



Highly pure isoprene is separated from a C_5 hydrocarbon fraction divided from cracking of petroleum, particularly naphtha, containing C_5 paraffin, C_5 monoolefines, C_5 diolefines, C_5 acetylenes, a small amount of C_4 and C_6 hydrocarbons and sulfur compounds by removing a major portion of cyclopentadiene and acetylenes contained in said fraction as polymerization retarding impurities according to dimerization by heat soaking and distillation, and distillation, respectively, and treating the fraction with sodium containing aliphatic monohydric alcohol having one to 18 carbon atoms in amount of not more than that of sodium by equivalent to remove the remaining cyclopentadiene, acetylenes and sulfur compounds.

3,692,862
METHOD FOR PYROLYZING HYDROCARBONS

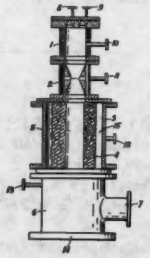
Miloslav Staud, and Anatolij Lazarev, both of Brno, Czechoslovakia, assignors to Chepos, Zavody Chemickeho a potra-vinarskeho strojirenstvi, generalni, Brno, Czechoslovakia

Division of Ser. No. 760,240, Sept. 17, 1968, Pat. No. 3,563,709, and a continuation-in-part of Ser. No. 674,570, Oct. 11, 1967, abandoned. This application Aug. 5, 1970, Ser. No. 61,144

Claims priority, application Czechoslovakia, Oct. 14, 1966, 6535-66

Int. Cl. C07c *3/30*

U.S. Cl. 260—683 R 6 Claims



A hydrocarbon raw material is pyrolyzed to lower unsaturated aliphatic hydrocarbons by mixing the raw material with

hot combustion gases at a rate sufficient to heat the mixture above the pyrolyzing temperature. The endothermic reaction is performed in a porous tube while oxygen is being forced into the tube through the wall to supply the thermal energy consumed and to maintain the pyrolysis temperature by oxidation of a portion of the pyrolysis product, particularly hydrogen. The reaction mixture is then quickly cooled.

3,692,863

DEHYDROGENATION AND DEHYDROCYCLIZATION METHOD

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,723
Int. Cl. C07c 5/18, 11/04; C10g 31/14
U.S. Cl. 260—683.3 10 Claims

A process for effecting a hydrogen transfer reaction involving the dehydrogenation of at least a part of the feed material, such as the dehydrocyclization of paraffinic hydrocarbons to produce aromatics, and the dehydrogenation of low molecular weight paraffins to produce hydrogen and monoolefins, including contracting the feed material with a catalyst comprising a metal of Group VIB of the Periodic System, in an amount between about 5 to 15 percent by weight of the finished catalyst, and a promotor of a metal of Group IV of the Periodic System, such as tin and lead in an amount of between about 1.0 and 10 percent by weight of the finished catalyst, both deposited on an inert oxide support such as gamma aluminas, silica-alumina, silica-magnesia, alumina-magnesia, etc., at a temperature between about 550° F. and 1,250° F., a pressure between about 0.01 and 2,600 mm. mercury absolute, and a liquid hourly space velocity between about 0.1 and 10. Where lower paraffins are dehydrogenated to olefins and hydrogen, the hydrogen is separated from the olefins and contacted with coal liquids in the presence of a hydrogenation catalyst, preferably of the same character as the dehydrogenation catalyst, and under conditions sufficient to a hydrogenate at least a part of the coal liquids. An additional promotor selected from the group of alkali metals, alkaline earth metals and rare earth metals may also be added.

3,692,864

HYDROGENATION PROCESS UTILIZING HOMOGENEOUS METAL CATALYSTS

Rudolph C. White, Midlothian, and Judd G. Thatcher, Richmond, both of Va., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,991
Int. Cl. C07c 5/02
U.S. Cl. 260—683.9 11 Claims

This invention relates to processes for hydrogenating unsaturated organic molecules such as olefins and dienes to their saturated derivatives utilizing homogeneous metal complexes of the iron triad type as catalytic agent.

3,692,865

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES AND PROCESS FOR PREPARING SAME

Guenther Fritz Lengick, 16 Maumee Court, Adrian, Mich.

Filed Dec. 30, 1970, Ser. No. 103,008
Int. Cl. C08g 47/10
U.S. Cl. 260—827 6 Claims

The invention relates to siloxane cross-linking agents and to curable one-component modified organopolysiloxanes obtained from the reaction of the siloxane cross-linking agents and a hydroxyl-terminated modified organopolysiloxane to form a composition which is curable by ambient moisture.

3,692,866

Patent Not Issued For This Number

3,692,867

FILAMENT COMPRISING A POLYMER BLEND OF POLYESTER AND POLYANIDE CONTAINING AN ORGANIC PHOSPHORUS COMPOUND

Richard E. Mayer; Amnon Birenzvige, and Gene C. Weedon, all of Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 752,789, Aug. 15, 1968, abandoned. This application March 10, 1971, Ser. No. 123,008
Int. Cl. C08g 41/04
U.S. Cl. 260—857 PE 27 Claims

A process for increasing the whiteness of a filament extruded from a polymer blend comprised of polyester and polyamide which comprises incorporating in the polymer blend prior to extrusion thereof a small amount of an organic phosphorus compound which can be an organic phosphite, phosphinate, phosphate, polymeric phosphite, polymeric phosphate, the corresponding acid, or mixtures thereof.

3,692,868

Patent Not Issued For This Number

3,692,869

Patent Not Issued For This Number

3,692,870

NEW POLYMERIC THERMOPLASTIC COMPOUNDS DERIVED FROM SUBSTANTIALLY LINEAR POLYCARBONATES AND PROCESS FOR THE PRODUCTION THEREOF

Hermann Schnell, Krefeld-Uerdingen, Germany; Manfred Cziesla, Washington, D.C., and Ludwig Bottenbruch, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 688,688, filed Dec. 7, 1967. Filed Nov. 17, 1970, Ser. No. 90,475
Claims priority, application Germany, Dec. 10, 1966, F 50 901
Int. Cl. C08f 21/00, 21/02
U.S. Cl. 260—861 22 Claims

New polymeric thermoplastic compounds having favorable properties are obtained by reacting substantially linear polycarbonates containing polymerizable unsaturated groups dissolved in inert solvents or dispersed in nonsolvents with radical-polymerizable olefins or derivatives thereof or mixtures thereof under polymerization conditions.

3,692,871

GRAFTING OF VINYL HALIDE AND LONG CHAIN ALIPHATIC VINYL MONOMERS ONTO A RUBBER-MODIFIED VINYL HALIDE GRAFT COPOLYMER

Massimo Baer, 49 Eunice Drive, Longmeadow, Mass.

Continuation-in-part of Ser. No. 669,386, Sept. 21, 1967, abandoned. This application May 15, 1970, Ser. No. 37,881
Int. Cl. C08f 15/40, 45/68
U.S. Cl. 260—878 R 10 Claims

There is disclosed a process for the preparation of graft copolymers of a vinyl halide and a long-chain aliphatic vinyl monomer. In accordance with the process, an aqueous dispersion is formed of a preformed rubber-modified vinyl halide graft copolymer, a vinyl halide monomer and a long-chain aliphatic monomer capable of copolymerizing with the vinyl halide monomer. Copolymerization of said monomers is the

presence of the aqueous dispersion of the preformed graft polymer leads to a polymeric particle whose shell contains a major proportion of the polymeric long-chain aliphatic monomer and whose core is essentially devoid of this monomer. This preferential concentration of a lubricating monomer on the outer shell of the product particle leads to greatly improved toughness under conditions of high shear.

3,692,872

PREPARATION OF GRAFT, BLOCK AND CROSSLINKED UNSATURATED POLYMERS AND COPOLYMERS BY OLEFIN METATHESIS

Nissim Calderon, Akron, Ohio, and Kenneth W. Scott, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 4, 1969, Ser. No. 882,270
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 R 6 Claims

A method is disclosed for preparing graft, block and crosslinked unsaturated polymers and interpolymers by subjecting polymers to catalysts capable of inducing the olefin metathesis reaction.

3,692,873

Patent Not Issued For This Number

3,692,874

PROCESS OF COUPLING ALKALI METAL-TERMINATED POLYMERS WITH SILICIC COMPOUND IN PRESENCE OF CONJUGATED DIENES

Ralph C. Farrar, and Clinton F. Wofford, both of c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 2, 1970, Ser. No. 69,189
Int. Cl. C08f *19/08, 27/04;* C08d *5/02*
U.S. Cl. 260—880 B 12 Claims

The coupling of alkali metal-terminated polymers with silicic coupling agents is significantly improved, both as to the rate of coupling and the efficiency of coupling, by the inclusion of a conjugated diene in a coupling procedure with the silicic coupling compound.

3,692,875

ELASTOMERIC MIXTURE OF A BENZENE-SOLUBLE POLYCHLOROPRENE AND A CROSSLINKED CHLOROPRENE POLYMER

Gert Jennes, Cologne-Flittard; Edmund Huther, Opladen, and Willi Wolff, Schildgen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 10, 1968, Ser. No. 728,350
Claims priority, application Germany, June 6, 1967, F 52 611
Int. Cl. C08f *29/22*
U.S. Cl. 260—890 5 Claims

A composition comprising a) a crosslinked copolymer of chloroprene and a diester of an unsaturated carboxylic acid and b) a benzene-solution chloroprene and a process for producing this composition.

3,692,876

STABILIZED FORMALDEHYDE POLYMERS

Jacob Ackermann, Gorla Minore; Pierino Radici, Turate, and Franco Ferre, Gorla Minore, all of Italy, assignors to Societa Italiana Resine S.D.R.S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 807,925, March 17, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 118,492
Claims priority, application Italy, April 11, 1968, 15088 A/68; Sept. 14, 1968, 21237 A/68
Int. Cl. C08g *37/04, 51/60*
U.S. Cl. 260—895 16 Claims

Formaldehyde polymers and copolymers are stabilized by incorporating 0.05 to 10 percent by weight of a complex obtained in the form of a precipitate by contacting, in a solvent or solvent mixture, an antioxidant of the phenolic type which has an acidic character and polyvinyl pyrrolidone. A composition of matter comprising said formaldehyde and said stabilizer is also claimed.

3,692,877

EMULSIFIABLE OXIDIZED POLYOLEFINS

Yasuo Shibahara, Kyoto; Yasohachi Shimoyama, Kawasaki, and Makoto Otaki, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed June 22, 1970, Ser. No. 48,469
Claims priority, application Japan, Dec. 25, 1969, 45/252
Int. Cl. C08f *29/12, 3/04, 27/22*
U.S. Cl. 260—897 B 12 Claims

An emulsifiable polyolefin having a combination of improved emulsifiability and thermal stability is produced by oxidizing a thermally decomposed polyolefin with a gaseous mixture containing oxygen and ozone in the presence of a low molecular weight oxidized polyolefin.

3,692,878

NOVEL INTERPOLYMER BLENDS

Robert B. Blance, 26 Colony Dr., East Longmeadow, Mass.; David R. Cahill, 52 Oakland St., Wilbraham, Mass., and Peter Nachtel, 1234 Wilbraham, Springfield, Mass.

Division of Ser. No. 783,700, Dec. 13, 1968, Pat. No. 3,607,376. This application April 21, 1971, Ser. No. 136,207
Int. Cl. C08f *41/12*
U.S. Cl. 260—901 4 Claims

Disclosed herein are polymer blends comprising a first interpolymer of a vinyl alcohol ester and at least one ethylenically unsaturated acid ester and a second interpolymer comprising a vinyl aromatic compound, at least one ethylenically unsaturated acid ester and at least one compound containing one or more acid groups. These blends are particularly useful as binders and adhesives.

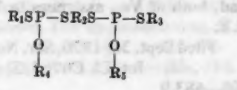
3,692,879

POLYPHOSPHITES

Kenneth H. Rattenbury, and Millard S. Larrison, both of Morgantown, W. Va., assignors to Watson Chemical Corporation, New York, N.Y., by said Rattenbury

Filed Jan. 15, 1970, Ser. No. 3,247
Int. Cl. C07f *9/06;* C10m *1/48;* C08f *45/58*
U.S. Cl. 260—928 7 Claims

Compounds are prepared having the formula



where R_1 and R_3 are alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl, cycloalkyl, R_2 is a divalent aromatic, aliphatic or cycloaliphatic group and R_4 and R_5 are aryl or haloaryl.

The compounds are useful as antioxidants.

3,692,880

PHOSPHATED POLYOLS AND PROCESS FOR MAKING SAME

Richard L. Doerr, Orange, and Stephen Fuzesi, Hamden, both of Conn., assignors to Olin Corporation

Filed May 4, 1970, Ser. No. 34,606
Int. Cl. C07f *9/08;* D06m *1/100*
U.S. Cl. 260—929 4 Claims

A novel phosphated polyol is provided which is used in conjunction with aminoplast resins to provide improved soil release particles to cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

3,692,881

PHOSPHATED SURFACE ACTIVE HYDROXY AMINES

James R. Stanford, and Paul G. Vogelsang, Jr., both of Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 680,028, Nov. 2, 1967, Pat. No. 3,597,352. This application Dec. 9, 1969, Ser. No. 883,599

Int. Cl. C07f 9/08

U.S. Cl. 260—928 3 Claims

Phosphated surface active hydroxy amines obtained by reacting polyphosphoric acid and/or phosphorus pentoxide with surface active hydroxyamines, e.g., C_8 to C_{18} amines, with or without one or more hydroxy hydrocarbons, with or without neutralization, are used as scale inhibitors in brines, especially in oil wells, where calcium and barium salts are present.

3,692,882

CYANODITHIOIMIDOCARBONATE PHOSPHATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 9, 1970, Ser. No. 17,954

Int. Cl. C07f 9/08; A01n 9/36

U.S. Cl. 260—940 5 Claims

Novel cyanodithioimidocarbonates are disclosed. The compounds are useful as herbicides.

3,692,883

PROCESS

Gary L. Sommars, 63 Brittian Rd., Akron, Ohio, and Adel F. Halasa, 5040 Everett Rd., P.O. Box 244, Bath, Ohio

Continuation-in-part of Ser. No. 854,267, Aug. 29, 1969, abandoned. This application June 7, 1971, Ser. No. 150,837

Int. Cl. C08d 3/04, 3/06

U.S. Cl. 260—94.2 T 13 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a sodium hydrocarbon compound having one to 10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl or an aryl radical, and (2) potassium hydroxide or preferably lithium hydroxide. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, high glass transition temperatures, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,692,884

PHOSPHATE ESTERS

Edwin R. Gaskell, 956 Bransten Rd., San Carlos, Calif.

Filed Feb. 7, 1969, Ser. No. 797,691

Int. Cl. C07f 9/08, 9/22

U.S. Cl. 260—944 11 Claims

A novel group of compounds, the reaction product of an amine and a phosphate ester that are useful as dispersing agents for the finely divided metal oxides used in preparing magnetic tape coatings. The compound having the formula:

$$[R(OA)_xO]_x\overset{O}{\overset{\|}{P}}[OH]_y[R']_z$$

where R is a hydrocarbon radical; A is an alkylene radical; R′ is an amine; and the sum of x, y and z is 3.

3,692,885

POLYHALOISOALKOXYALKYL PHOSPHATE ESTERS

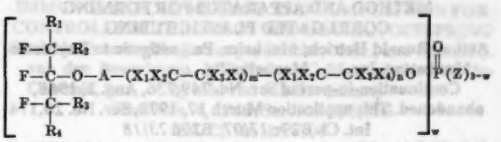
Louis G. Anello, Basking Ridge; Richard F. Sweeney, Dover; Edward S. Jones, Whippany; John T. Walsh, Lake Hiawatha, and John J. Thompson, Jr., Chatham, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,235

Int. Cl. C07f 9/08; D21h 1/38

U.S. Cl. 260—950 43 Claims

This invention relates to novel phosphate esters of the formula



wherein

a. R_1–R_4 are independently fluorine, chlorine or alkyl or haloalkyl groups of one to 10 carbon atoms;

b. A is a radical of the formula $-(CFR_5-CR_6R_7)-$ in which R_5 and R_6 are independently fluorine or hydrogen, and R_7 is hydrogen, fluorine, chlorine, bromine or perfluoroalkyl;

c. X_1–X_4 are independently hydrogen, fluorine, chlorine or bromine, provided that X_1–X_4 do not include more than two chlorine atoms or one bromine atom;

d. Z is selected from the group consisting of chlorine, hydroxy, amino, substituted amino and OY wherein Y is a hydrocarbyl or hydroxy-substituted hydrocarbyl, or a water solubilizing cationic ion.

e. m is an integer from 1 to 10, n is an integer from 0 to 10 and w is an integer from 1 to 3.

Said phosphate esters are useful for imparting oil and stain repellent properties to various materials, especially to paper.

3,692,886

Patent Not Issued For This Number

3,692,887

CONTROLLED CALCINATION OF AGGLOMERATED NUCLEAR FUEL PRIOR TO PELLETIZING AND SINTERING

Alfred J. P. Flipot, Geel, Belgium, assignor to Belgonucleaire S.A., Bruxelles, Belgium

Filed Dec. 23, 1968, Ser. No. 786,434

Claims priority, application Belgium, Dec. 21, 1967, 52.429; Sept. 12, 1968, 63.310

Int. Cl. G21c 3/62; C04b 35/64

U.S. Cl. 264—0.5 3 Claims

Manufacturing method for sintered nuclear reactor fuel pellets exhibiting improved density reproducibility in which the fabrication procedure includes thermal deactivation at 600° to 1,000° C. for a controlled time of the fuel after an initial agglomeration step but prior to pelletizing, followed by an optional addition of a pressing lubricant, pelletizing, and sintering to about 1,600° C or above. The thermal deactivation step reduces the amount of shrinkage encountered in the sintering step as compared with conventional techniques resulting in good dimensional characteristics and density uniformity.

3,692,888

CASTING HYDRIDES

Ernest C. Phillips, Jr., 2533 Albeworle Court, Richland, Wash.

Filed July 2, 1969, Ser. No. 838,717
Int. Cl. G21c *21/00*
U.S. Cl. 264—.5 R 6 Claims

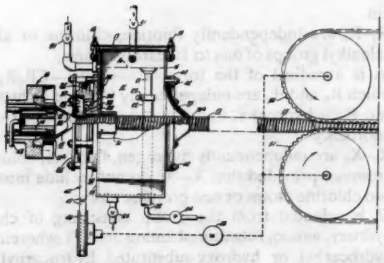
A method of casting lithium hydride, lithium deuteride or lithium tritide, or mixtures of these with zirconium hydride in a titanium or titanium-coated mold under a hydrogen atmosphere exceeding the dissociation pressure of titanium hydride, whereby, on cooling, the cast material can be readily removed from the mold without damage thereto.

3,692,889

METHOD AND APPARATUS FOR FORMING CORRUGATED PLASTIC TUBING

Arthur Ronald Hetrich, Manheim, Pa., assignor to Raybestos-Manhattan, Inc., Manheim, Pa.

Continuation-in-part of Ser. No. 749,736, Aug. 2, 1968, abandoned. This application March 17, 1970, Ser. No. 20,174
Int. Cl. B29c *17/07*; B29d *23/18*
U.S. Cl. 264—92 2 Claims



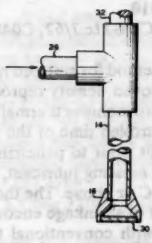
Corrugated plastic tubing is formed by producing a plastic tube in a softened condition, passing the softened tube through a rotatable disc having an axial bore with a helical groove for corrugating the wall of the tubular body and then cooling the tube to set the corrugations formed in the wall of the tube. Means is provided for rotating the die, and means synchronized with the rotating means is also provided for drawing the tubular body through the die and cooling chamber to form a helical corrugation in the tubing wall. A pressure differential is applied in the die across the wall of the tubular body to force the wall of the tube into the die groove. Means is provided for engaging the softened tubular body adjacent the entrance to the die to restrain the tubular body against rotation with the die and prevent the softened tubular body from becoming twisted or kinked before entering the die.

3,692,890

STOMP FOOT HAVING POROUS FACE

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 13, 1969, Ser. No. 876,495
Int. Cl. B29c *17/07*
U.S. Cl. 264—98 10 Claims



A closed off end of a tubular thermoplastic parison is pressed against a back-up surface by means of a stomp foot having a porous face through which gaseous fluid is passed.

3,692,891

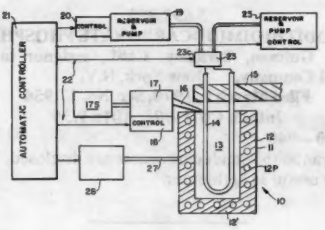
Patent Not Issued For This Number

3,692,892

CASTING AND MOLDING METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 304,165, Aug. 23, 1963, Pat. No. 3,427,714. This application Feb. 24, 1969, Ser. No. 801,430
Int. Cl. B29c *1/08*
U.S. Cl. 264—317 4 Claims



A casting and molding method is provided employing one or more hollow members disposed in a mold to provide a core for hollow molding. In one form, heat transfer liquid is predeterminately circulated through the hollow core member during the molding process and serves a number of functions including reduction in the time for the molding to set, prevention of destruction of the core member by heat and, in certain instances, internal support for the core member during molding. Automatic control means are provided for controlling both the molding procedure and the flow of heat transfer fluid through the core member. The method, with minor variations, is applicable to both casting and injection molding of various materials such as metals which are molded at high temperature and require the transfer of heat therefrom or thermosetting materials which require heat to be transferred to the molding material during the molding and setting procedure.

The instant invention is also concerned with certain post molding procedures associated with moldings containing hollow core members such as means for removing the core members by dissolving or eroding the material thereof.

ERRATA

For Classes 423—328 thru 423—239 see:
Patents Nos. 3,692,470 thru 3,692,480

3,692,893

HAIR SPRAY CONTAINING A TETRAPOLYMER COMPRISING N-T-BUTYL ACRYLAMIDE OR -N-ISOPROPYL ACRYLAMIDE

Lucille Elma Palmer, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 862,044, Sept. 29, 1969, Pat. No. 3,634,368. This application May 7, 1971, Ser. No. 141,441
Int. Cl. A61k *7/10*
U.S. Cl. 424—47 5 Claims

An aerosol spray containing a tetrapolymer of (A) N-t-butyl acrylamide or N-isopropyl acrylamide, (B) acrylamide or methacrylamide, (C) N-vinyl pyrrolidone and (D) acrylic or methacrylic acid, is disclosed.

3,692,894

DENTIFRICE COMPOSITION

Tadashi Amo, Funabashi, and Tuneo Nagasawa, Tokyo, both of Japan, assignors to Kao Soap Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,720
Claims priority, application Japan, March 31, 1970, 45/26505
Int. Cl. A61r 7/16
U.S. Cl. 424—56 3 Claims

The invention relates to a surfactant-containing dentifrice powder or paste having improved after-taste characteristics containing a polishing agent and from 0.7 to 2.8 percent by weight of a combination of alkyl sulfates constituting 0.2 to 1.0 percent decyl sulfate, 0 to 0.3 percent dodecyl sulfate, 0.2 to 0.5 percent tetradecyl sulfate and 0.1 to 1.0 percent of hexadecyl sulfate, said alkyl sulfates being present as alkali metal salts or alkanolamine salts.

3,692,895

METHOD OF REDUCING HYPERCHOLESTEREMIA IN HUMANS EMPLOYING A COPOLYMER OF POLYETHYLENEPOLYAMINE AND A BIFUNCTIONAL SUBSTANCE, SUCH AS EPICHLOROHYDRIA

Norman A. Nelson, 1643 South 36th St., Galesburg, Mich., and Gary E. VandenBerg, 2304 Robin Dr., Plant City, Fla.

Continuation-in-part of Ser. No. 737,365, June 17, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,567
Int. Cl. A61k 27/00
U.S. Cl. 424—78 8 Claims

Compositions and processes are provided for lowering hypercholesteremia in mammals and birds. Oral administration to affected mammals and birds supplies an effective amount of a cholesterol-lowering substance. The cholesterol-lowering substance is a nontoxic cross-linked copolymer of a polyethylenepolyamine and a bifunctional substance containing halogen atoms and/or epoxy groups.

3,692,896

PROCESS FOR THE PREPARATION OF WATER-SOLUBLE TABLETS

Jusha Tsumura, No. 51, Nanpeidai, Shibuya-ku, Tokyo; Isumi Imaseki, No. 2-31-11, Naritahigashi, Suginami-ku, Tokyo, and Michio Nagasawa, No. 335, Kori, Fujieda-shi, Shizuoka-ken, all of Japan, assignors to Tsumura Juntendo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 783,716, Dec. 13, 1968, abandoned. This application March 3, 1971, Ser. No. 120,709
Claims priority, application Japan, June 14, 1968, 43/40601
Int. Cl. A61j 3/10
U.S. Cl. 424—78 8 Claims

There is provided, a process for the preparation of quickly dissolving water-soluble, clear, aqueous solution forming tablets, which comprises:

(a) directly compressing by means of a single punching tablet machine, having an upper punch and a lower punch, a mixture obtained by mixing powder or powders of water-soluble main ingredients with supermicro particle powdered polyethylene glycol 4,000, 6,000, and mixtures thereof, as the essential direct compression tablet lubricant, with required water-soluble conventional tablet diluents, binders, and disintegrants, and

(b) subsequently, ejecting the tablets thus produced from said machine,

the improvement which comprises compressing with the upper punch with an upper punch pressure of 2,000 Kg., while maintaining said upper punch and said lower punch at a pressure sufficient to create a transmission value to the fixed lower punch of greater than 85, which value is derived from the following formula:

Transmission value = (pressure of lower punch/pressure of upper punch) × 100

when supermicro particle powdered polyethylene glycol having a particle size ranging from 1.0 to 5.0 microns, is provided as the essential direct compression tablet lubricant,

said improvement enhancing lubricity during direct compression at an upper punch pressure of 2,000 Kg., and thus reducing the 70 Kg., ejection force required for ejecting such tablets from said machine to below 70 Kg.

3,692,897

IMMUNOLOGICAL METHOD AND COMPOSITION FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING

Bhairab Chandra Bhattacharya, Omaha, Nebr., and Gustaaf J. van den Bovenkamp, Mill Valley, Calif., assignors to Bio-Controls, Inc., by said van den Bovenkamp

Filed Nov. 4, 1969, Ser. No. 873,795
Int. Cl. A61k 27/00
U.S. Cl. 424—85 3 Claims

An immunological method for controlling the sex of mammalian offspring, making use of spermatozoa which has been previously separated into fractions having the desired sex characteristics an antigens. A substantially pure sperm fraction containing the sex chromosomes of a single type (i.e., X chromosomes or Y chromosomes) is introduced into the body of a mammal in sufficient quantity to produce antibodies in the blood stream. A blood sample is then taken from the mammal, the blood coagulated and the blood serum containing the antibodies isolated. Fresh mammalian sperm is inoculated with the blood serum to inactivate and destroy sperm reactive with the antibodies in the blood serum and the treated sperm used to artificially inseminate the female, thereby inducing conception and offspring of desired sex as determined by the remaining unreacted sperm.

In one application of the invention, antibodies reactive with either the X or Y chromosomes may be added to a dose of semen to cause death to sperm containing that type of chromosome before insemination. Alternatively, the antibodies may be introduced into the female either prior or subsequent to copulation (e.g., in a vaginal jelly or as a vaccine) to provide the possibility of sex selection at conception or possible embryonic death to a fetus of undesired sex.

3,692,898

AQUEOUS MAGNESIUM HYDROXIDE SUSPENSIONS

William G. Gorman, East Greenbush, and Erich Katz, Troy, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,330
Int. Cl. A61k 27/00
U.S. Cl. 424—158 3 Claims

Improved milk of magnesia containing small quantities of a combination of agents, namely, xanthan gum and sodium carboxymethylcellulose.

3,692,899

INHIBITION OF TRANSPLANTED TUMOR GROWTH BY POLYINOSINIC-POLYCYTIDYLIC ACID IN MICE

Hilton B. Levy, Bethesda, Md., assignor to The United States of America as represented by the Secretary, Department of Health, Education and Welfare

Filed Dec. 17, 1969, Ser. No. 885,817
Int. Cl. A61k 27/00
U.S. Cl. 424—180 1 Claim

Process for retarding or inhibiting the growth of transplanted malignant tumors by administering to a tumor-bearing mouse an effective dose of polyinosinic-polycytidylic acid.

3,692,900

BIS-PHOSPHOROAMIDES, BIS-PHOSPHONOAMIDES, AND PHOSPHONO-PHOSPHOROAMIDES USEFUL AS INSECTICIDES AND MITICIDES

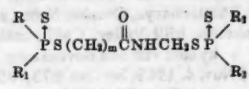
Arnold D. Gutman, Pinole, and Ashley H. Freiberg, Santa Clara, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 654,692, July 20, 1967, Pat. No. 3,577,088, which is a continuation-in-part of Ser. No. 390,280, Aug. 17, 1964, abandoned. This application Dec. 22, 1969, Ser. No. 889,821

Int. Cl. A01n 9/36

U.S. Cl. 424—205 6 Claims

Bis-phosphoroamides, Bis-phosphonoamides and phosphono-phosphoroamides of the general formula



in which *m* is the integer 1 or 2, R and R_2 are independently selected from the group consisting of lower alkyl and lower alkoxy, R_1 and R_3 are independently selected lower alkoxy groups. The sum of the carbon atoms in R, R_1, R_2, and R_3 being a maximum of 12. Included in this invention is a method of preparing, using and applying said compositions. The compounds are particularly valuable for their insecticidal and miticidal properties. Representative compounds are 3-(0,0-diethyl-phosphorodithioyl)-N-(0,0-diethylphosphorodithioylmethyl)propionamide, 3-(0,0-diethylphosphoro-dithioyl)-N-(0,0-dimethylphosphorodithioylmethyl)propionamide, and 2-(0-ethyl-ethylphosphonodithioyl)-N-(0,0-diethylphosphorodithioylmethyl)acetamide.

3,692,901

CERTAIN SUBSTITUTED PHOSPHORUS CONTAINING ALKYL THIO METHYL CARBOXYLATES AND THEIR USES AS INSECTICIDES AND ACARICIDES

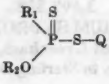
Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 681,576, Nov. 8, 1967, Pat. No. 3,562,362. This application Sept. 2, 1970, Ser. No. 69,095

Int. Cl. A01n 9/36

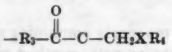
U.S. Cl. 424—212 16 Claims

Certain substituted phosphorus containing alkyl thio methyl carboxylates of the formula



in which R_1 is alkyl or alkoxy and R_2 is alkyl, Q is:

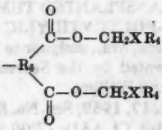
(1)



in which

R_3 is alkylene, C_1—C_4;
X is sulfinyl or thio and
R_4 is alkyl, C_1—C_4; or

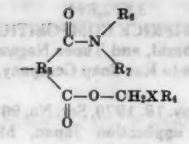
(2)



in which

X and R_4 are as defined and R_5 is a trivalent saturated hydrocarbon, C_1—C_3; or

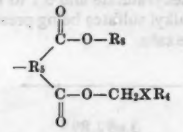
(3)



in which

X, R_4 and R_5 are as defined and R_6 and R_7 are hydrogen, alkyl C_1—C_6, aryl, halo or cyano substituted alkyl or aryl, or tetrahydro furfuryl or when R_6 and R_7 are taken together, an alkylene, C_2—C_6, ethyleneoxyethylene or ethylenethioethylene groups; or

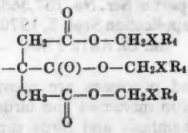
(4)



in which

X, R_4 and R_5 are as defined and R_8 is alkyl C_1 or C_2 or halogen, aryl, haloaryl substituted derivatives thereof; or

(5)



in which

X and R_4 are as defined are used as insecticides and acaricides.

3,692,902

CERTAIN PHOSPHOROUS COMPOUNDS USED AS INSECTICIDES, MITICIDES AND FUNGICIDES

Tatsumi Nishimura; Sumio Nagasawa; Hiroshi Shinohara, all of Shimizu City, and Masaru Kado, Yokohama City, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

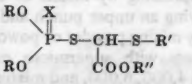
Continuation-in-part of Ser. No. 680,970, Nov. 6, 1967, abandoned. This application Oct. 14, 1969, Ser. No. 866,381

Claims priority, application Japan, Dec. 19, 1966, 41/82689; July 31, 1967, 43/48778

Int. Cl. A01n 9/36

U.S. Cl. 424—212 12 Claims

An insecticidal, miticidal and fungicidal composition comprising as an active ingredient an insecticidally, miticidally and fungicidally effective amount of a compound of the formula:



in which R and R″ are lower alkyl, R″ is selected from the group consisting of phenyl, lower alkyl-substituted phenyl, chlorine-substituted phenyl and nitro substituted phenyl, and X is selected from the group consisting of oxygen and sulfur, in the presence of an inert diluent.

3,692,903

Patent Not Issued For This Number

3,692,904

METHOD FOR TREATING SCOURS IN DOMESTIC LIVESTOCK

Yoshio Tsutsumi, Tokyo, Japan, assignor to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,351
Int. Cl. A61k 27/00, 21/00
U.S. Cl. 424—227 4 Claims

Scours has been effectively treated and prevented by administering to domestic animals at least one compound selected from the group consisting of trans-4-aminomethylcyclohexanecarboxylic acid, 4-aminomethylbenzoic acid, ε-aminocaproic acid, and the pharmaceutically acceptable salts thereof.

3,692,905

Patent Not Issued For This Number

3,692,906

METHOD OF TREATING HYPERTENSION WITH MORPHANTHRIDINES

Richard Dage, Brown Deer, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,502
Int. Cl. A61k 27/00
U.S. Cl. 424—244 6 Claims

The inventive method comprises administering a safe and effective amount of a selected morphanthridine to a hypertensive animal to effect a lowering of blood pressure. Representative of the compounds that can be used in the method are 2-chloro-11-(3-dimethylaminopropylidene)-morphanthridine, 11-(3-dimethylaminopropyl)-morphanthridine and 11-(1-methyl-4-piperidylene)-morphanthridine.

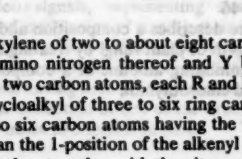
3,692,907

TREATING VIRAL INFECTIONS WITH BIS-BASIC ETHERS AND THIOETHERS OF FLUORENONE AND FLUORENE AND PHARMACEUTICAL COMPOSITONS OF THE SAME

Robert W. Fleming, Cincinnati, Ohio; David L. Wenstrup, Covington, Ky., and Edwin R. Andrews, Cincinnati, Ohio, assignors to Richardson-Merrell Inc.

Continuation-in-part of Ser. No. 788,038, Dec. 30, 1968, Pat. No. 3,592,819. This application Oct. 27, 1970, Ser. No. 84,493
Int. Cl. A61k 27/00
U.S. Cl. 424—248 32 Claims

Novel pharmaceutical compositions containing bis-basic ethers and thioethers of fluorenone and fluorene selected from a base of the formula

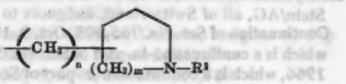


wherein: Z is oxygen or H_2; each Y is oxygen or sulfur; and each X is

A. the group

wherein A is alkylene of two to about eight carbon atoms and separates the amino nitrogen thereof and Y by an alkylene chain of at least two carbon atoms, each R and R^1 is hydrogen, (lower)alkyl, cycloalkyl of three to six ring carbon atoms, alkenyl of three to six carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of R and R^1 taken together with the nitrogen to which they are attached is pyrrolidino, piperidino, N-(lower)alkylpiperazino, or morpholino; or

B. the group



wherein n is an integer of 0 to 2, m is 1 or 2 and R^2 is hydrogen, (lower)alkyl, or alkenyl of three to six carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group; or a pharmaceutically acceptable acid addition salt of said base.

These compositions can be used as pharmaceuticals for preventing or inhibiting a viral infection.

3,692,908

METHOD OF COMBATING NEMATODES EMPLOYING N,N'-DISUBSTITUTED-2,5-DIKETOPIPERAZINES

Marvin T. Tetenbaum, and Edward R. Degginger, both of Convent, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed March 25, 1970, Ser. No. 22,667
Int. Cl. A01n 9/22
U.S. Cl. 424—250 2 Claims

Materials, such as plants, are protected from attack by fungi and nematodes by applying to the material an N,N'-disubstituted-2,5-diketopiperazine wherein the substituents are halogen, halometallo, or acyloxymetallo.

3,692,909

METHODS OF COMBATTING FUNGI USING 6-ALKYLTHIO AND 6-PHENYL-THIO PYRIMIDINE DERIVATIVES

Kurt Gubler, Riehen; Raphael Menasse, and Karl Gatzi, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 749,598, Aug. 2, 1968, abandoned. This application Feb. 25, 1970, Ser. No. 14,233
Claims priority, application Switzerland, Aug. 16, 1967, 11515/67
Int. Cl. A01n 9/12, 9/22
U.S. Cl. 424—251 4 Claims

Antifungal compositions are disclosed which contain as active ingredients 6-alkylthio- and 6-phenylthio-pyrimidines substituted in 2- and 5-position by halogen and in 4-position by halogen or lower alkyl. Methods for controlling fungi with the acid of the aforesaid pyrimidine derivatives are also described.

3,692,910

BENZYLISOQUINOLINIC SOLUTIONS AND METHOD OF MAKING THE SAME

Umberto Laguzzi, Via Cadore 52, Milan, Italy

Filed Sept. 5, 1968, Ser. No. 757,800
Claims priority, application Italy, Sept. 7, 1967, 20249 A/67
Int. Cl. A61k 27/00
U.S. Cl. 424—258 12 Claims

Benzylisoquinolinic solutions and particularly injectable solutions are produced by forming an intimate mixture of appropriate proportions of benzylisoquinolinic compounds, aliphatic alkanol amines which serve as solubilizing agent, a buffer selected from salts of organic acids with alkanol amines or N-methylglucamine, and the proportion of water required to obtain the final solution of the desired concentration of the benzylisoquinolinic compound.

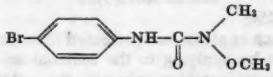
3,692,911

METHOD FOR SELECTIVELY COMBATING FUNGI AND WEEDS

Henry Martin, Basel; Hans Aebi, Riehen, and Ludwig Ebner, Stein/AG, all of Switzerland, assignors to Ciba-Geigy AG

Continuation of Ser. No. 766,308, Oct. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 592,747, Nov. 8, 1966, which is a continuation-in-part of Ser. Nos. 433,154, Feb. 16, 1965, abandoned, Ser. No. 433,152, Feb. 16, 1965, abandoned, Ser. No. 433,183, Feb. 16, 1965, abandoned, Ser. No. 433,204, Feb. 16, 1965, abandoned, Ser. No. 433,203, Feb. 16, 1965, abandoned, Ser. No. 433,192, Feb. 16, 1965, abandoned, Ser. No. 433,198, Feb. 16, 1965, abandoned, Ser. No. 433,153, Feb. 16, 1965, abandoned, each is a continuation-in-part of Ser. No. 191,442, May 1, 1962, Pat. No. 3,288,851.
This application June 22, 1970, Ser. No. 48,955
Claims priority, application Switzerland, May 6, 1961, 5336/61
Int. Cl. A01n 9/20
U.S. Cl. 424—322 1 Claim

A method is provided for selectively and simultaneously controlling undesirable plant life in crop area wherein a culture of rice, potatoes, corn, beans, peas, soyabeans, cotton, peanuts, carrots or tomatoes are growing. According to the method of this invention an effective amount of the compound of the formula



is applied to the crop area.

3,692,912

BIS (3,4,4-TRIFLUORO-3-BUTENYL) SULFIDE AS A NEMATOCIDE

Mervin E. Brokke, Richmond, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 490,664, Sept. 27, 1965, Pat. No. 3,513,172. This application Nov. 20, 1969, Ser. No. 877,540
Int. Cl. A01n 9/12
U.S. Cl. 424—335 2 Claims

Certain trifluorobutenyl compounds of the formula

$$CF_2{=}CFCH_2CH_2{-}R$$

wherein R is a member selected from the group consisting of chlorothiophenyl, thio 3,4,4-trifluoro-3-butenyl, 2-thio-4,4,6-trimethyldihydropyrimidyl, 2-thiobenzoxazoyl, 2-thiobenzothiazolyl, 2-thio-4-alkylthiazolyl, S-(3,4,4-trifluoro-3-butenyl) -ethylene-bis (dithiocarbamoyl), thiobenzyl, thionaphthyl, phthalimido, dithio-3,4,4-trifluoro-3-butenyl, thiopyridyl, N-thiazolidyl dione and 5-thio-3-phenyl-1,2,4-thiadiazolyl, useful as nematocides.

3,692,913

CYCLOHEXENYL AMINES IN THE TREATMENT OF PAIN

William Taub, 39 Stockerstrasse, 8002 Zurich; Rolf Denss, 43 Schutzenmattstrasse, Basel, 43 Schutzenmattstrasse, and Franz Ostermayer, 5 Am Hang, Riehen, all of Switzerland

Division of Ser. No. 702,552, Feb. 2, 1968, Pat. No. 3,518,307. This application Oct. 13, 1969, Ser. No. 871,228
Claims priority, application Switzerland, Feb. 6, 1967, 1820/67
Int. Cl. A61k 27/00
U.S. Cl. 424—325 6 Claims

Alkyl and alkenyl substituted cyclohexenyl amines are prepared which compounds as well as pharmaceutically acceptable acid addition salts thereof have analgesic and anorexigenic activities; therapeutic compositions containing said compounds and methods of producing analgesic and anorexigenic effects in mammals; an illustrative embodiment is 1-methyl-3-cyclohexen-1-ylamine.

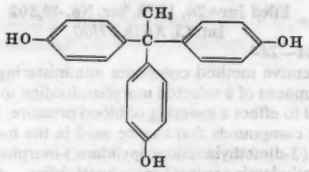
3,692,914

4,4',4''-TRIHYDROXYTRIPHENYLMETHYLMETHANE AS A LAXATIVE

Ronald J. Meyer; Orville E. Horsley, and Herman J. Eichel, all of Cincinnati, Ohio, assignors to American Hoechst Corporation, New York, N.Y.

Division of Ser. No. 740,066, June 26, 1968, Pat. No. 3,579,542. This application June 22, 1970, Ser. No. 59,810
Int. Cl. A61k 27/00
U.S. Cl. 424—346 2 Claims

4,4',4''-Trihydroxytriphenylmethylmethane having laxative (cathartic) properties of the formula:



3,692,915

COMPOSITIONS AND METHODS FOR COMBATTING INSECTS OF THE GENUS HELIOTHIS

George F. Ludvik, Kirkwood, Mo., and Walter A. Darlington, Brentwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 13, 1970, Ser. No. 37,026
Int. Cl. A01n 9/30, 9/34
U.S. Cl. 424—352 5 Claims

Mixtures for combating insect species of the genus Heliothis comprising 1,1-dichloro-2,2-bis(4'-chlorophenyl) cyclopropane and a polychloro bicyclic terpene characterized by a combined chlorine content of from about 60 percent to about 72 percent by weight.

3,692,916

COMPOSITION AND METHOD FOR INHIBITING GROWTH OF PLANT PATHOGENS

Robert R. La Barbera, Vallodolid, Spain, assignor to Wm. T. Thompson Co., Wilmington, Calif.

Filed July 6, 1970, Ser. No. 52,746
Int. Cl. A01n 9/26
U.S. Cl. 424—346 11 Claims

The disclosure describes a composition and method for inhibiting the growth of plant fungi by treating such plant fungi with a fungus-inhibiting amount of a composition including both thymol and chlorothymol.

ELECTRICAL

3,692,917
CURRENT SUPPLY DEVICE FOR USE IN ELECTRIC FURNACES

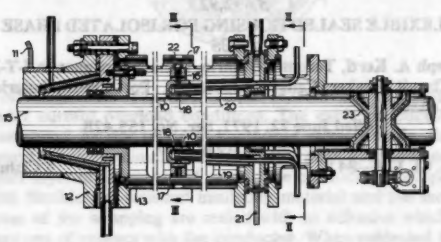
Helmut Seifert, 8 Sternmarderweg, Hermulheim; Hans Werner Stephan, 77 Olbergstrasse, Cologne, and Friedrich Wilhelm Dorn, 3 Giselherweg, Hermulhein, all of Germany, assignors to Knapsack Aktiengesellschaft Knapsack bei Cologne, Germany

Filed March 23, 1971, Ser. No. 127,186

Claims priority, application Germany, March 24, 1970, P 20 14 019.6

Int. Cl. H05b 7/10

U.S. Cl. 13—15 **2 Claims**



Device for supplying current to self-consuming electrodes which are required to be advanced or lowered during operation, for example in an electrothermal reduction furnace. A plurality of current supply means encircling the electrode and spaced apart from each other by small slits is arranged above the furnace head. The individual current supply means are concentrically surrounded by a ring which forces them into elastic contact with the electrode, and are cooled separately.

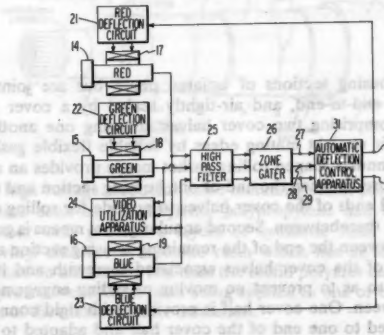
3,692,918
AUTOMATIC REGISTRATION OF COLOR TELEVISION CAMERAS

Charles Langdon Olson, Oaklyn, and Robert Adams Dischert, Burlington, both of N.J., assignors to RCA Corporation

Filed May 17, 1971, Ser. No. 143,794

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 M **14 Claims**



Predominantly positive and negative polarity waves formed from edge video signals, representing sharp transitions between light and dark areas of a subject and derived from two of a plurality of pickup tubes respectively responsive to different component colors of the subject, are peak detected to produce a signal having such polarity and amplitude as to so control the beam deflection in one of the tubes that the edge video signals are made to coincide in time.

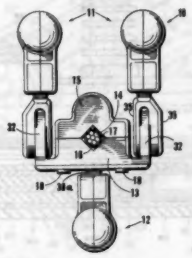
3,692,919
VIBRATION DAMPING DEVICE FOR TRANSMISSION LINES

Louis Rostoker, Toronto, Ontario, Canada, assignor to Pep Professional and Engineered Patents Limited

Filed July 8, 1971, Ser. No. 160,789

Int. Cl. H02g 7/14

U.S. Cl. 174—42 **7 Claims**



The following disclosure concerns a vibration damping device for transmission lines which embodies a combination of upstanding suppressor heads and a base adapted to be clamped to the transmission lines or cable for the suppression of galloping wave type vibrations with a suspended suppressor head of similar construction and adapted to suppress high frequency aeolian vibrations, the galloping wave suppressor heads being adapted to rock on pivotal mountings and the high frequency suspended suppressor head being fixed relative to the clamping base.

3,692,920
RACEWAY FOR BEDS OF HOSPITALS AND THE LIKE

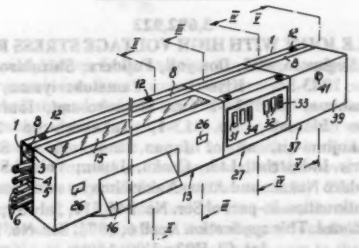
Sandro Santarelli, V.le Borri 92, Varese, Italy

Filed April 9, 1971, Ser. No. 132,647

Claims priority, application Italy, April 13, 1970, 23235 A/70

Int. Cl. H02g 3/18

U.S. Cl. 174—48 **13 Claims**

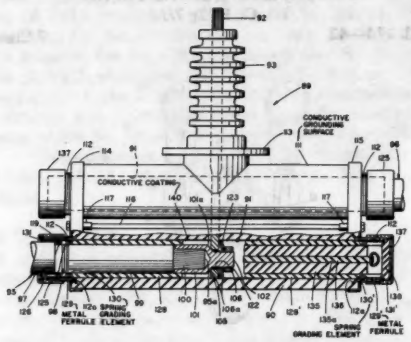


An elongated base plate is mounted on a wall. Support means forwardly of the base plate support electrical conductors and pipes in a suspended manner along the base plate. A first cover plate forms a first compartment which houses the conductors and pipes, the latter being readily accessible by moving the first cover plate. A second cover plate forms, with the first cover plate, a second compartment which houses utility output devices which are connected to the conductors and pipes and which are readily accessible by moving the second cover plate.

3,692,921
CABLE COUPLER

Edward H. Yonkers, Wilmette, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed April 12, 1971, Ser. No. 133,005
Int. Cl. H01r 13/00; H02q 15/00
U.S. Cl. 174—72 R 5 Claims

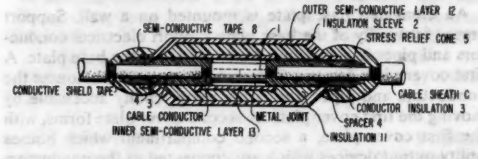


There is provided an improved high voltage cable coupler having a body of integrally cast dielectric polymer chemically formed in situ and having at least one cable receiving channel therethrough. An internal conductor is cast within the body extending within the cable receiving channel to receive the end of a cable. The cable receiving channel is symmetrical, and a cable may be inserted in one end, secured through the other, and the other end then plugged. A soft polymer sealing sleeve advantageously provides air-free interfaces between the cable and the walls of the cable channel, and between the plug and the wall of the cable channel. In a desired embodiment, the soft polymer sealing sleeve is thicker in wall section than the space between the cable and channel so as to form an interference fit between the cable and channel, and between the plug and cable channel wall, so as to resiliently load the soft polymer. At all times, the inner end of the soft polymer is free to move axially into a shielded space, thus permitting a limited range of cable diameters to be used with a given sealing sleeve, and a wide range of cable diameters can be accommodated by employing sealing sleeves of various appropriate wall thickness.

3,692,922
CABLE JOINT WITH HIGH VOLTAGE STRESS RELIEF

Yoichi Sugimoto, 625, Domyoji, Fujidera; Shizuhiro Nakata, No. 1043-34, Kiyo-cho, Yamatokoriyama; Atsuo Nakashima, No. 924-2 Oza Shimohosumi, Ibaraki, and Souzo Idomoto, No. 13-1, Takakura-cho 2-chome, Miyakojima-ku, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan; Yoichi Sugimoto, Shizuhiro Nakata and Atsuo Nakashima by said Idomoto

Continuation-in-part of Ser. No. 846,517, July 31, 1969, abandoned. This application April 6, 1971, Ser. No. 131,612
Int. Cl. H02g 3/00, 15/08
U.S. Cl. 174—73 R 6 Claims

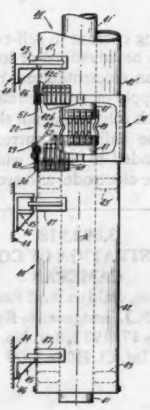


A cable joint employs premolded insulation in the form of a sleeve which is applicable irrespective of the size of the cable by making the inner diameter of the end portion of the premolded insulation sleeve equal to or larger than the diameter of the outer sheath of the cable and inserting a cylindrical spacer into a gap which is present between the inner circumference of the insulation sleeve and the outer circumference of the cable. The sleeve includes inner and outer concentric tubular portions, the inner portion being formed of electrically insulative material and the outer tubular portion of semi-conductive material, the end faces of the inner tubular portion being frustoconical and tapering away from the conductor joint. A stress cone formed on the end of each spacer acts as frustoconical extension to the outer tubular portion of the sleeve providing high voltage stress relief to the cable joint.

3,692,923
FLEXIBLE SEALED HOUSING FOR ISOLATED PHASE BUS

Joseph A. Kerti, Toronto, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Port Credit, Ontario, Canada

Filed June 22, 1971, Ser. No. 155,428
Int. Cl. H02g 5/06
U.S. Cl. 174—84 S 6 Claims



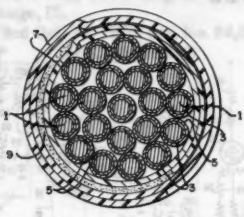
Two housing sections of isolated phase bus are jointed together, end-to-end, and air-tightly sealed by a cover assembly comprising two cover halves engaging one another along their straight mating edges by suitable flexible gasket means. Annular shaped rolling gasket means provides an air-tight closure between the end of one housing section and the associated ends of the cover halves to provide for rolling engagement therebetween. Second annular gasket means is positioned between the end of the remaining housing section and the ends of the cover halves associated therewith and it is designed so as to prevent no moving or sliding engagement therebetween. One cover half is provided with rigid connectors welded to one end of the cover half and adapted to be bolted to the end of the adjacent housing section. Flexible connectors are welded to the opposite end of the same cover half and are adapted to be bolted to the adjacent housing. The connector provide a continuous electrical path between the adjacent housing sections which are joined and sealed by the cover halves. The cover half not provided with the above mentioned connectors allows for subsequent disassembly for maintenance or repair without unbolting the connectors. The apparatus provides the necessary continuous electrical path while eliminating the need for any welding operations in the field to facilitate both assembly and disassembly thereof.

3,692,924

NONFLAMMABLE ELECTRICAL CABLE

Eugene A. Nye, Yorba Linda, Calif., assignor to La Barge, Inc., St. Louis, Mo.

Filed March 10, 1971, Ser. No. 122,940
Int. Cl. H01b 7/02
U.S. Cl. 174—120 SR 10 Claims



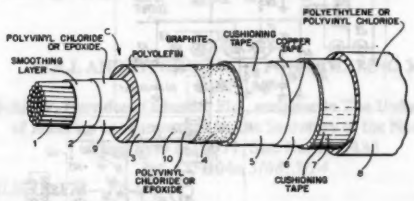
Nonflammable electrical cable resistant to combustion under current overload conditions. The cable conductor is constituted by one or more composite metal strands. Each strand has an aluminum base core clad with copper and has an outer layer of silver, nickel or tin. The conductor is wrapped with flexible fire-resistant insulating material and the facing areas of the wrapping are sealed with an adhesive which is kept out of contact with the conductor. When subjected to a current overload in an oxygen atmosphere the strand fuses, thereby interrupting the current, before either the insulating material or the adhesive can ignite.

3,692,925

HIGH VOLTAGE ELECTRICAL CABLE

Eugen Kindij, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed April 28, 1971, Ser. No. 138,177
Claims priority, application Germany, April 30, 1970, P 20 21 172.7
Int. Cl. H01b 7/02
U.S. Cl. 174—120 C 6 Claims



A high voltage electrical cable including olefin polymer insulation such as polyethylene, polypropylene and the like, together with protective layers of synthetic resin such as polyvinyl chloride or epoxide resin which has an electrical breakdown anisotropy less than the olefin polymer insulation; the protective layer of resin being applied to one or both surfaces of the olefin polymer insulation.

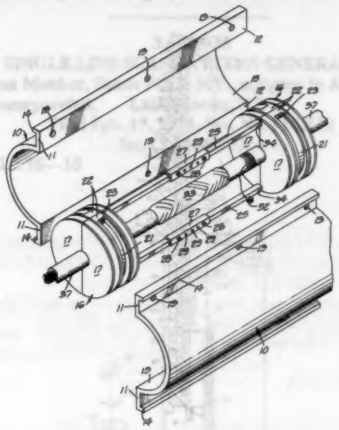
3,692,926

ALIGNABLE END SEALS FOR A SPLICE CASE

Donald J. Smith, Canoga Park, Calif., assignor to Smith-Schreyer & Assoc., Inc.

Filed July 6, 1971, Ser. No. 159,956
Int. Cl. F16k 41/00
U.S. Cl. 174—92 15 Claims

A device for sealing the ends of a splice case. The device comprises two end seals rigidly fixed to each other by connecting members. Each end seal is made of two mating end pieces which are tightly clamped together about the cables by mechanical means. The connecting members provide alignment of the end seals during and after assembly of the splice case and provide a conducting path for the cable shields to bridge the splice.

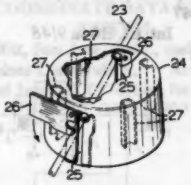


3,692,927

COVER FOR INSULATOR ASSEMBLY

Edwin Ivan Ellaschuk, 10 MacDonald Crescent, Saskatoon, Saskatchewan, Canada

Filed June 1, 1971, Ser. No. 148,415
Claims priority, application Canada, June 1, 1970, 084214
Int. Cl. H01b 17/50
U.S. Cl. 174—139 2 Claims



An improved cover for protecting insulators used with high voltage transmission lines from contamination. The cover is generally bell shaped and has a lower end fitted over the insulator assembly; when in position, the cover is coaxial with the insulator assembly, and the coaxial relationship is maintained by means of ribs formed on the inner wall of the cover which engage the outer edge of the insulator assembly. The lower end of the cover is dimensioned so that there is adequate clearance between the cover and the lower portion of the insulator assembly, to prevent current for arcing over to the outer surface of the cover.

3,692,928

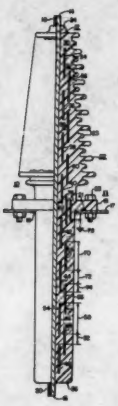
ELECTRICAL BUSHING HAVING A CAPACITOR CHAIN FORMED BY OVERLAPPING CAPACITOR ELEMENTS

Kevin F. Friedrich, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,236
Int. Cl. H01b 17/28
U.S. Cl. 174—143 12 Claims

An electrical bushing having electrical insulation disposed about an axially extending conductor, and a plurality of stress grading elements disposed in the insulation to grade radial and

longitudinal stresses in the bushing. These stress grading elements includes at least two groups of substantially tubular elements, with the elements of each group being axially spaced



and dimensioned such that the wall portions of each group are substantially aligned. The aligned space between two elements of one group is bridged by an element of an adjacent group.

3,692,929

COLOR TELEVISION RECEIVER WITH COLOR SIGNAL CORRECTION FOR VARIOUS TRANSMISSION CHANNELS

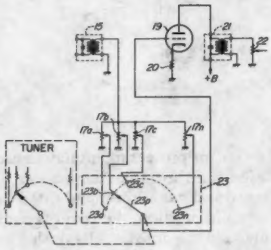
Masayoshi Hirashima, Takatsuki, Japan, assignor to Mansushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1970, Ser. No. 96,759

Claims priority, application Japan, Dec. 16, 1969, 44/102198; Dec. 16, 1969, 44/102199; Dec. 16, 1969, 44/102201; Dec. 23, 1969, 45/581; Dec. 29, 1969, 45/757; Feb. 3, 1970, 45/9747

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 R **8 Claims**



A color television receiver provided with a plurality of color signal regulator variable resistors having respective slide terminals connected to corresponding fixed contacts of a switch interlocked to the tuning mechanism of a receiver. The color signal regulators may be preset such that substantially the same color saturation or hue of the chrominance signal output may be obtained irrespective of the channel to which it is tuned in.

3,692,930

Patent Not Issued For This Number

3,692,931

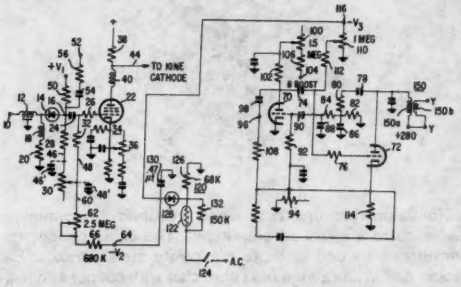
TELEVISION IMAGE CONTROL CIRCUIT

John Kenneth Allen, and Marvin Neil Norman, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,451

Int. Cl. H04n *5/14*

U.S. Cl. 178—7.3 R **6 Claims**



A voltage dependent resistor is coupled to sense the line voltage applied to a television receiver, and to respond to its variations in a manner to maintain substantially constant brightness and vertical height in the reproduced image when such changes occur.

3,692,932

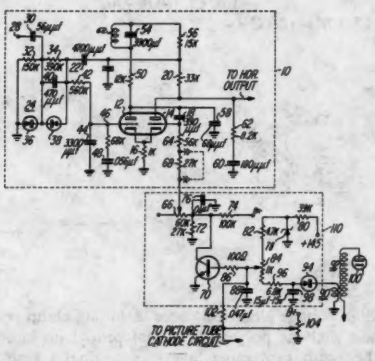
HORIZONTAL OSCILLATOR DISABLING CIRCUIT CONTROL APPARATUS

Paul Carleton Wilmarth, Indianapolis, Ind., assignor to RCA Corporation, 02, New York, N.Y.

Filed May 18, 1971, Ser. No. 144,464

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.5 R **4 Claims**



Concurrently filed United States Patent application Ser. No. 144,457, entitled "HORIZONTAL OSCILLATOR DISABLING CIRCUIT" describes a means of shifting the frequency of the horizontal oscillator of a television receiver in the presence of high voltage increases which could cause X-radiation problems. As therein described, a negative direct voltage indicative of the developed ultor potential for its cathode-ray tube is combined with a relatively stable positive direct voltage to change the bias on a control transistor and the effective resistance in the time constant network determining the oscillator frequency. The present invention provides a further positive direct voltage to the transistor from the brightness control network of the receiver, so as to control the point at which the oscillator goes off frequency as a function of picture tube beam current. Such further voltage will be seen

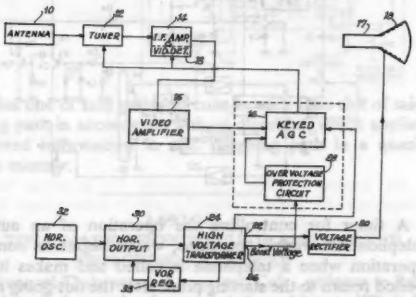
to reduce the criticality in determining the point at which the frequency shifting is to occur and the point at which the reproduced picture becomes unviewable.

3,692,933

X-RADIATION PROTECTION CIRCUIT

Ronald S. Knoll, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Oct. 28, 1970, Ser. No. 84,841
Int. Cl. H04n 5/68
U.S. Cl. 178—7.5 R 10 Claims



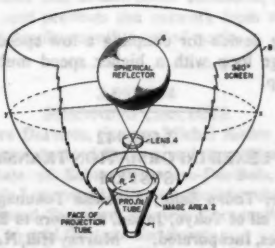
A protective circuit is disclosed which is adapted to detect and indicate an overvoltage condition in a television receiver by blanking both sound and picture information. The circuit is coupled between an output of the receiver's high voltage transformer and an input of the receiver's automatic gain control (AGC) system. The normal input signal to the AGC circuit is a video information component of a broadcast television signal selected by the tuner and amplified. The AGC system normally responds to the varying signal strength of the synchronizing signal information of the video signal to control the gain of the receiver's tuner and IF amplifier sections. Should the output of the receiver's high voltage transformer rise above a predetermined level, the protective circuit generates a failure signal which causes the AGC system to cut off signal flow through the tuner and IF sections, thus terminating both audio and video reproduction by the receiver.

3,692,934

ROLL AND PITCH SIMULATOR UTILIZING 360° DISPLAY

John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 11, 1971, Ser. No. 114,433
Int. Cl. H04n 5/68, 5/74
U.S. Cl. 178—7.5 D 1 Claim



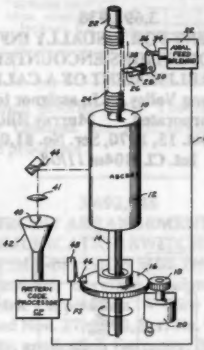
In a training device having a television system for projecting a scene such as, for example, an outdoor view, the scene may be viewed by a trainee from a simulated craft which experiences roll, pitch and other movements. The scene is optically projected onto a display screen from an image on the face of a cathode ray tube. The invention provides electronic means for moving the image on the cathode ray tube to move the projected scene on the display screen and thus simulate roll and pitch movements of the simulated craft.

3,692,935

SINGLE LINE SCAN PATTERN GENERATOR

Solomon Manber, Sands Point, N.Y., assignor to Alphanumeric, Incorporated, Lake Success, N.Y.

Filed Feb. 17, 1971, Ser. No. 116,132
Int. Cl. H04l 15/34
U.S. Cl. 178—15 3 Claims



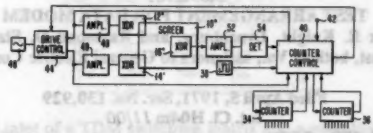
A pattern generator includes a rotating record-medium-carrying drum which is scanned by an intensity-modulated beam of electromagnetic radiation. The beam sequentially scans adjacent linear regions in a peripheral band of the record medium. The beam is turned on and off during the scans to write characters.

3,692,936

ACOUSTIC COORDINATE DATA DETERMINATION SYSTEM

John Stuart Moffitt, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1970, Ser. No. 47,397
Int. Cl. G08c 21/00
U.S. Cl. 178—18 13 Claims



The use of graphical display devices in conjunction with digital computer and data processing systems is enhanced by an acoustic coordinate determining system providing a completely unobstructed view of the display. A transparent sheet of suitable material, such as glass, arranged in front of the display and acoustic waves are propagated in the material from a spaced pair of acoustic wave radiating elements radiating acoustic energy in the sheet at a frequency of the order of 185 kHz. An acoustic probe tuned to the frequency of the radiation is touched to the material for developing currents on arrival of the radiated waves. These currents control counting circuitry advanced by pulses derived from a 2.5 MHz oscillator under control of circuitry comprising conventional gating circuits and latches for manifesting values proportional to the distances of the probe at any given point in the display with respect to the two transducers. The conversion of counting circuitry values to r, θ or X-Y coordinates is done under programmed computer control if desired.

3,692,937

Patent Not Issued For This Numbe

ERRATUM

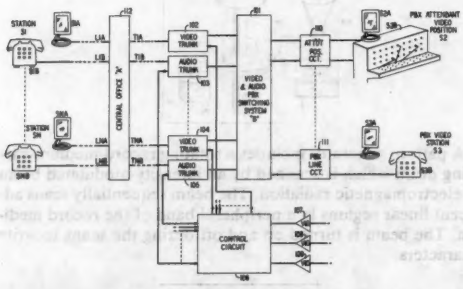
For Class 179—2 DP see:
Patent No. 3,691,593

3,692,938

ARRANGEMENT FOR VISUALLY INFORMING STATIONS OF CONDITIONS ENCOUNTERED DURING ESTABLISHMENT OF A CALL

Eric John Addeo, Long Valley, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1970, Ser. No. 81,003
Int. Cl. H04m *11/08*
U.S. Cl. 179—2 TV **7 Claims**



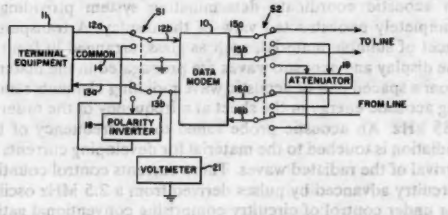
An audio-video switching system is provided with a control circuit operable to detect the various conditions encountered during the establishment of calling connections through the system and in response to each such condition to select a corresponding one of a plurality of video image generators and to associate such generator with the communication path extending to the corresponding calling station so as to visually inform the calling station of the status of the call.

3,692,939

TEST ARRANGEMENT FOR DATA MODEM

Patrick E. Knight, Lynchburg, and Raymond D. Stapleton, Forest, both of Va., assignors to General Electric Company

Filed April 5, 1971, Ser. No. 130,929
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 DP **5 Claims**



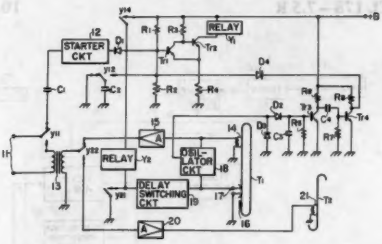
A data modem is provided with loop-back circuits between the modem transmitter and receiver. If the modem is operating, the loop-back circuits cause oscillations. In addition, the oscillations can also indicate the operating condition of the modem so that adjustments can be made if needed.

3,692,940

TIMER OF AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

Akira Konno, Tokyo, and Tomoaki Kosaka, Yachiyo-shi, Chiba, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 19, 1970, Ser. No. 38,855
Claims priority, application Japan, May 19, 1969, 44/38087
Int. Cl. H04m *11/10*
U.S. Cl. 179—6 **2 Claims**



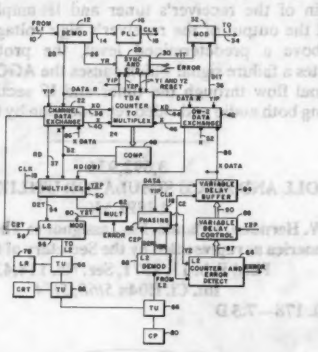
A timer for controlling the operation of an automatic telephone answering apparatus, which begins its controlling operation when a telephone is called and makes its timer period return to the starting point after the out-going message is completely read out.

3,692,941

DATA EXCHANGE AND COUPLING APPARATUS

Arthur A. Collins, and John Dan Hill, III, both of Dallas, Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Sept. 23, 1970, Ser. No. 74,669
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **7 Claims**



A coupling device for coupling a low speed multiplexed data exchange loop with a higher speed multiplexed data exchange loop.

3,692,942

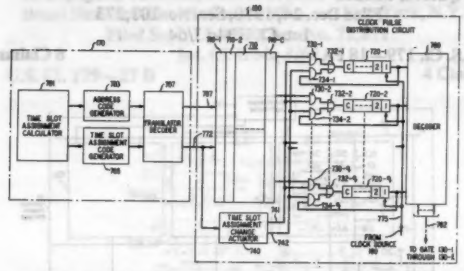
MULTIPLEXED INFORMATION TRANSMISSION SYSTEM

Hiroshi Inose; Tadao Saito; Takehisa Tokunaga, and Kenji Tomizawa, all of Tokyo, Japan, assignors to Bell Telephone Laboratories, Incoporated, Murray Hill, N.J.

Filed June 7, 1971, Ser. No. 150,352
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BV **11 Claims**

A time division multiplex communication system operates to combine the transmissions from the plurality of low speed multiplex paths onto a single high speed path having a transmission rate of C. The incoming information from each low

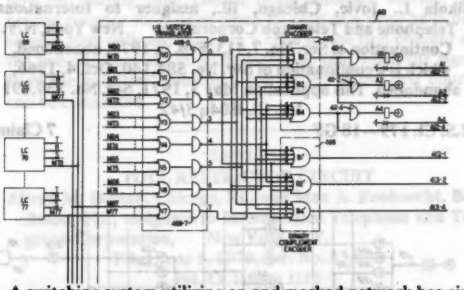
speed path is stored in a buffer memory. A gating circuit selectively applies the stored information from the buffer memory to the high speed path in assigned time slots of said high speed path. A control unit connected to each gating circuit selectively enables one of said gating circuits in each time slot of said outgoing path in accordance with an algorithm which applies said stored information to said outgoing path in a quasi-uniform manner.



3,692,943
MULTIPLE MARK DETECTORS FOR END MARKED SWITCHING NETWORKS

Louis Emanuel Thelemaque, Longmont, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1971, Ser. No. 145,734
Int. Cl. H04q 3/42
U.S. Cl. 179—18 E 21 Claims



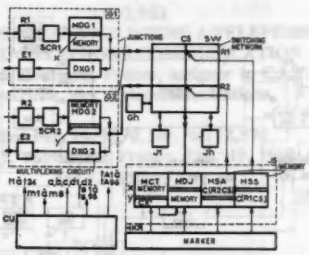
A switching system utilizing an end marked network has circuitry for detecting the presence of double marks on either side of the network. The network functions in the conventional manner to complete a connection between a line side and a trunk side circuit in response to the application of a single mark on each side. In response to the simultaneous application of two or more marks to either side, the detection circuitry recognizes this as a trouble condition, generates an alarm signal, and prevents the network from attempting to respond to the simultaneously applied marks.

3,692,944
SCANNING CIRCUITS

Bernard Pierre Durteste, Sevres; Michel Andre Robert Henrion, Boulogne, both of France, and Jean-Pierre Le Corre, deceased, late of Sainte-Genevieve-Des-Bois, France (by Yuette Marie Laurence Le Corre, administratrix), assignors to International Standard Electric Corporation, New York, N.Y., by said Durteste and Henrion

Filed March 31, 1970, Ser. No. 24,114
Claims priority, application France, March 31, 1969, 6909623
Int. Cl. H04m 3/30
U.S. Cl. 179—18 FF 5 Claims

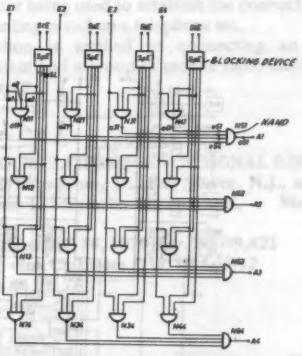
Scanning circuits are provided in a time multiplex central switching exchange. Scanning involves detecting new calls, to which high priority is given, and also changes of state in previously received information. Two memories are used to store the results of scanning and each memory is divided into two parts, one for each priority level. The messages giving new calls and other changes are sent to the processor when requested by the processor.



3,692,945
CIRCUIT ARRANGEMENT FOR TELECOMMUNICATION SWITCHING SYSTEMS EMPLOYING TIME-DIVISION MULTIPLEX OPERATION

Karl Maier, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,230
Claims priority, application Germany, Dec. 2, 1969, P 19 60 486.5
Int. Cl. H04q 3/50
U.S. Cl. 179—18 GF 9 Claims



Each inlet of a TDM switching matrix and a plurality of associated control lines are connected to equivalent inputs of first NAND-circuits whose outputs are combined into the outlets of the switching matrix via second NAND-circuits. Decoders and matching circuits are not needed. If the control inlets are not wired, a simulation of a selection by special block circuits is prevented.

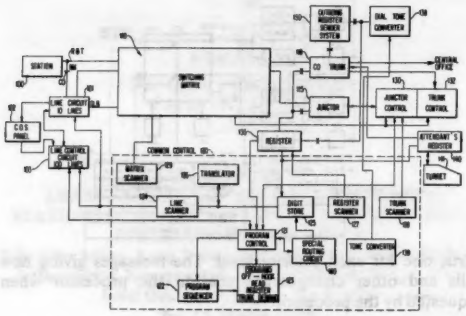
3,692,946
SPECIAL SERVICE ROUTING

Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,930
Int. Cl. H04m 3/44
U.S. Cl. 179—18 BA 10 Claims

A special service routing circuit provides for single digit access to service centers in a complex of buildings or a large multi-storied building, such as a motel or hotel, in such a way

that particular centers can be accessed only by particular lines in accordance with their location. The routing circuit



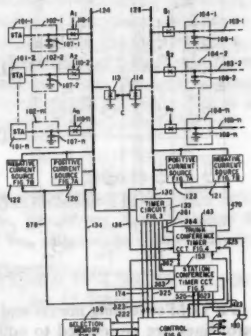
generates three digits to accompany the single dialed digit, which three digits will have a value depending on the location of the calling party for access to certain service lines.

3,692,947

TIME DIVISION SWITCHING SYSTEM CONFERENCE CIRCUIT

Theras Gordon Lewis, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,308
Int. Cl. H04m 3/56
U.S. Cl. 179—18 BC **12 Claims**



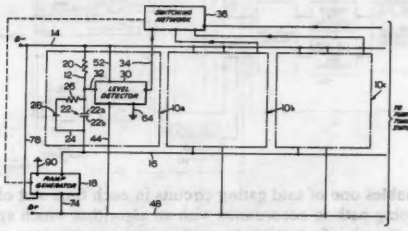
In a time division switching system having first and second groups of storage devices, a plurality of first and second group storage devices, are conferenced by first detecting the difference between the signals on selected pairs of first and second group conference storage devices in a first plurality of successive time slots in a cycle. The detected signal differences are summed and stored; and in a second group of successive time slots, a signal is applied to each first group conference storage device for a time corresponding to the difference between the first group conference storage device and the sum signal. A signal is also applied to each second signal group conference storage device in said second group of successive time slots for a time corresponding to the difference between the signal on the second group conference storage device and the sum signal.

3,692,948

TELEPHONE QUEUING CIRCUIT

Wesley John Warner, Westmount, Quebec, Canada, assignor to Western Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 24, 1970, Ser. No. 101,273
Int. Cl. H04q 3/64
U.S. Cl. 179—18 FA **8 Claims**



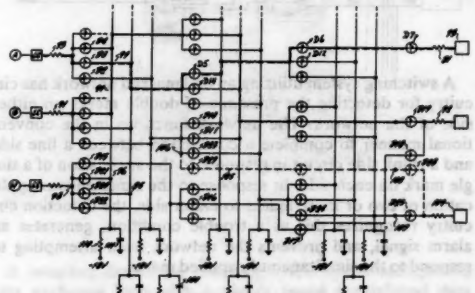
An analog method and circuit for queuing incoming telephone calls and releasing the calls in order of age. A timing station is provided for each call circuit, in which a voltage varies as the time, relative to calls at other stations, a call has been waiting at that particular station. When an operator is ready to service a call, all the station voltages are changed equally and in the same sense as the voltage variations, and the first station to reach a predetermined voltage level is detected.

3,692,949

MULTI-STAGE ELECTRONIC SWITCHING NETWORK

Nikola L. Jovic, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 7,413, Feb. 6, 1970, abandoned, which is a continuation of Ser. No. 584,140, Oct. 4, 1966, abandoned. This application May 3, 1971, Ser. No. 139,891
Int. Cl. H04q 3/42
U.S. Cl. 179—18 GF **7 Claims**



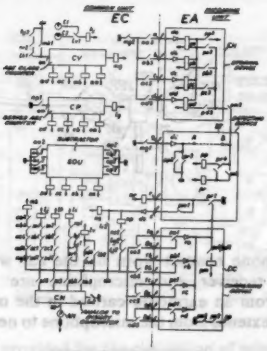
A self-seeking current controlled electronic switching network comprised of a plurality of cascaded stages of switching matrices. Each vertical multiple has an associate RC network for controlling the duration of the turned-on time period of the crosspoints during a route search. The RC circuit controlled time periods are selected to make each stage of the network run at an independent frequency, the frequencies being selected as a function of (a) the dynamic biasing changes which occur in the crosspoints responsive to the turning on and off, (b) the dynamic tapering which occurs in the network responsive to busy vertical conditions, and (c) the frequency of preceding stages.

3,692,950

SYSTEM FOR RECORDING AND CONNECTING WAITING CALLS ON A CHRONOLOGICAL BASIS

Roland S. Lecoanet, Saint-Germain-les-Arpajon, and Jean A. H. Lepagnol, Chatillon, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,271
Int. Cl. H04q 3/66
U.S. Cl. 179—27 D 4 Claims



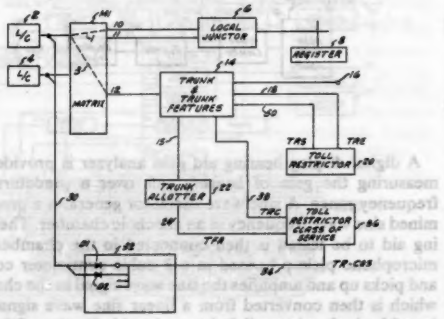
A circuit is provided for connecting calls in chronological order so that those which have been waiting longest are connected first. A first counter determines and indicates waiting calls according to classes of waiting time and current waiting time for incoming calls. A second counter provides information on waiting time classes being afforded service. The second counter steps once when all calls of a class have been served. New calls are stored in a class by the first counter and the two counters are interconnected so that when the signals from the counters coincide a call stored in the first counter can be connected.

3,692,951

TOLL RESTRICTOR CIRCUIT

Alfred M. Hestad, Chicago, Ill., and Max A. Bouknecht, Boca Raton, Fla., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 5, 1970, Ser. No. 43,890
Int. Cl. H04m 3/38
U.S. Cl. 179—27 CB 11 Claims



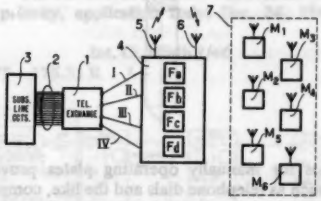
Logic circuits which function as toll restrictors are disclosed for use in an Electronic PABX. These circuits are responsive to a dialed code demanding that a particular connection be made. The circuits include means responsive to either dial pulses or multi-frequency signals to generate a coded signal of use in further processing. The circuits determine from the coded signal whether the particular caller is entitled to that service and provide a signal indicating whether a connection is authorized or not.

3,692,952

APPARATUS FOR ESTABLISHING A TELEPHONE TO RADIO-TELEPHONE COMMUNICATION

Didier Leonard, Boulogne, France, assignor to C.I.T. - Compagnie Industrielle des Telecommunications, Paris, France

Filed Feb. 19, 1970, Ser. No. 12,576
Claims priority, application France, Feb. 19, 1969, 6904070
Int. Cl. H04q 7/04
U.S. Cl. 179—41 A 20 Claims



The invention concerns duplex radiocommunications at variably-selected carrier frequencies.

It describes a concentrator ensuring the duplex connection at variably-selected carrier frequencies between a system of mobile transmitters and a telephone exchange comprising several unattended transmitter-receiver sets, in which the transmitter contains an individual call coder and a general call coder, the latter being used to establish the connection with a mobile set wanting to call up a telephone set.

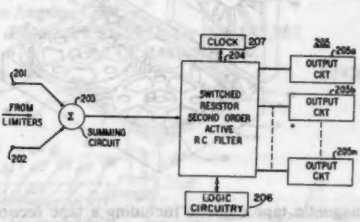
The invention is applied to connecting an ordinary telephone system and a group of mobile radio electric transmitter receivers.

3,692,953

MULTIPLEX MULTIFREQUENCY SIGNAL RECEIVER

Ralph William Wyndrum, Jr., Fair Haven, N.J., assignor to Bell Tlephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1970, Ser. No. 99,421
Int. Cl. H04m 1/50; H04q 9/12
U.S. Cl. 179—84 VF 7 Claims



In a multifrequency signal receiver the presence of each of *n* possible input signal frequencies is tested, sequentially, for a time proportional to the period associated with the frequency. Testing is effected by sequentially changing the resistive magnitude *n* times in the feedback path of an active R–C filter. The signal filter thus performs the function of *n* conventional filters.

3,692,954

APPARATUS FOR MANUALLY OPERATING PLATES OR DISCS PROVIDED WITH APERTURES

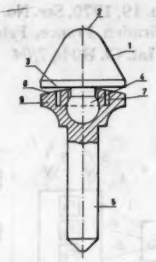
Frans Van Moorsel, Hilversum, Netherlands, assignor to Gozen Spierenburg, Hilversum, Netherlands

Filed May 27, 1970, Ser. No. 41,010

Claims priority, application Germany, June 2, 1969, P 19 28 075.2

Int. Cl. H04m 1/23

U.S. Cl. 179—90 AT 3 Claims



Apparatus for manually operating plates provided with apertures such as telephone dials and the like, comprising two parts, one of which is provided with a handle and the other one being substantially conical, said two parts being interconnected via coupling means such that the conical part is movable relative to the first-mentioned part.

3,692,955

Patent Not Issued For This Number

3,692,956

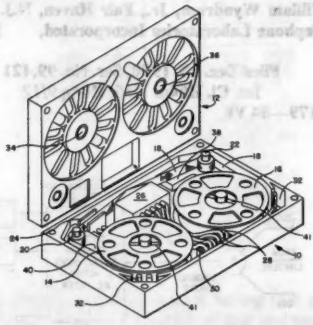
SEALED MAGNETIC TAPE CASSETTE APPARATUS

Malcolm B. Northrup, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 20, 1970, Ser. No. 91,337

Int. Cl. G11b 23/08, 15/12

U.S. Cl. 179—100.2 Z 4 Claims



A magnetic tape cassette including a tape recording head wherein the cassette is environmentally sealed. The cassette includes a reel brake for preventing accidental movement of the reels when the cassette is not attached to a tape drive unit. The cassette further includes means or detecting end of tape and middle of tape conditions and for preventing accidental recording.

3,692,957

Patent Not Issued For This Number

3,692,958

MICROPHONE HEADSETS

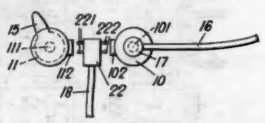
Leslie E. Basil Dymoke, Bradshaw, Edgware, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed March 2, 1971, Ser. No. 120,207

Claims priority, application Great Britain, March 2, 1970, 9,880/70

Int. Cl. H04m 1/05

U.S. Cl. 179—156 A 1 Claim



A microphone headset worn on the ear without a headband. The receiver and microphone are in a housing suspended from an earmould carried in the outer ear and a speech tube extends from the microphone to near the lips.

3,692,959

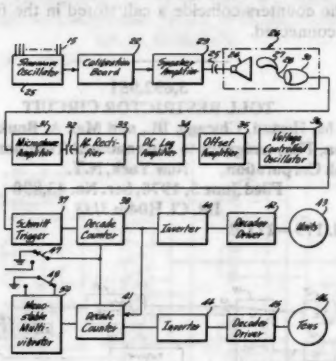
DIGITAL HEARING AID GAIN ANALYZER

Paul F. Lamp, Casselberry, Fla., assignor to Electone, Inc., Orange County, Fla.

Filed Oct. 28, 1970, Ser. No. 84,823

Int. Cl. H04r 29/00

U.S. Cl. 179—175.1 A 9 Claims



A digital display hearing aid gain analyzer is provided for measuring the gain of hearing aids over a predetermined frequency range. A sine wave oscillator generates a predetermined sine wave frequency in an anechoic chamber. The hearing aid to be tested is then connected in the chamber to a microphone pickup housed in a 2 cubic centimeter coupler and picks up and amplifies the sine wave signal in the chamber which is then converted from a linear sine wave signal to a logarithmic signal to a digital type signal indicative of the gain of the hearing aid which is then displayed on Nixie tubes.

3,692,960

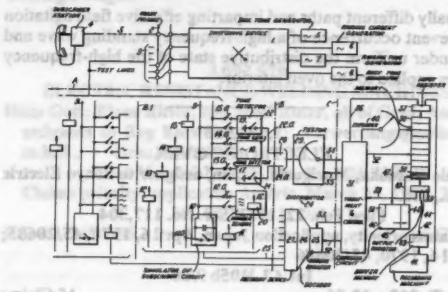
Patent Not Issued For This Number

3,692,961

TELEPHONE CALL SIMULATOR

Guy Jean Le Strat, Issy-Les-Moulineaux; Rene Francois, Lannion, and Pierre-Louis Joseph Satie, Perros Guirec, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,404
Claims priority, application France, Nov. 26, 1969, 6940720
Int. Cl. H04m 3/24
U.S. Cl. 179—175.2 R 12 Claims



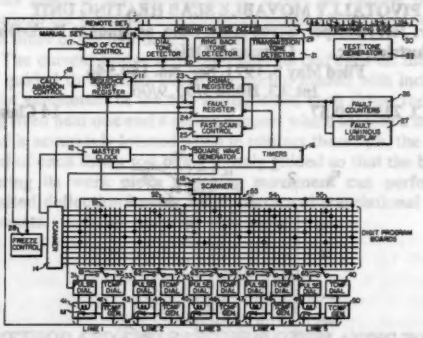
Equipment is provided for the simulation of telephone calls on special test lines connected to a telephone exchange in order to check the proper routing of calls by the exchange under test. Operations are simulated and checked by connecting special test circuits to the test lines. Working characteristics of each test line are stored in a memory unit. A small computer processes all these memory units through fast exploration cycles and simultaneously a distributor-device controls operations of each test circuit on its associated test line and a testing device records corresponding signals in the exchange.

3,692,962

SIMULTANEOUS CALL TELEPHONE EQUIPMENT TEST SYSTEM

John R. Raczynski, and Mitch Silkaitis, both of Chicago, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 11, 1971, Ser. No. 105,506
Int. Cl. H04m 3/26, 1/42
U.S. Cl. 179—175.2 R 10 Claims



An automatic dialing test system is disclosed wherein electrical signals such as pulses or tones representing each of the digits of a call number are applied to a selected group of communication lines of a telephone system. The digits to be applied to each line are selected on a diode plug board program field. The manner of signaling, dial pulse or multi-frequency tone is selected by an enabling switch that connects the multi-frequency applying relays and a diode decoder or, a dial pulse applying relay and associated diode decoder, to the program field. The duration of the pulses is determined by pulse generators driven from a common clock source.

3,692,963

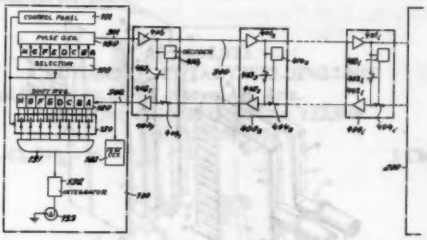
Patent Not Issued For This Number

3,692,964

REMOTE-TESTING ARRANGEMENT FOR TWO-WAY TRANSMISSION CHANNEL OF PCM TELECOMMUNICATION SYSTEM

Roberto Camiciottoli, and Maurizio Palombari, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni S.p.A., Milan, Italy

Filed Dec. 21, 1970, Ser. No. 99,855
Claims priority, application Italy, Dec. 24, 1969, 26303 A/69
Int. Cl. H04b 3/46
U.S. Cl. 179—175.31 R 9 Claims



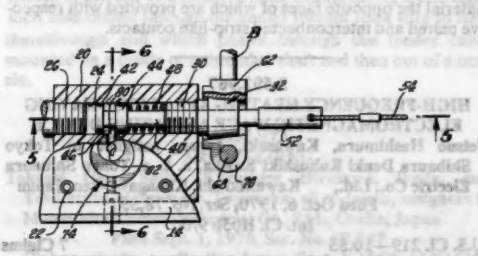
To test several repeaters in a two-way transmission channel designed for pulse-code-modulation message signals, an identification code individual to a given repeater is sent out from a terminal station over one signal path and is picked up by a decoder at that repeater which, in response to several recurrences of the same code, closes a loop through the other signal path for feeding the code back to the originating station. The identification code is inserted four times in a binary sequency, sandwiched between guard codes of first-order and second-order periodicity to limit the possibility of accidental formation within the sequence of a code assigned to a different repeater.

3,692,965

ANTI-THEFT BATTERY DISCONNECTOR APPARATUS

Newell John Gardner, Brentwood Square, 11661 Vincente Blvd., Los Angeles, Calif.

Filed April 21, 1971, Ser. No. 135,881
Int. Cl. H01h 9/28
U.S. Cl. 200—44 10 Claims



An anti-theft battery disconnect apparatus for vehicles (e.g., automobiles, boats, and the like) permits quick and effective deoenergization of the vehicle's electrical system. A conductor shaft which is electrically connected to one of the battery cables in the vehicle is normally spring-biased into

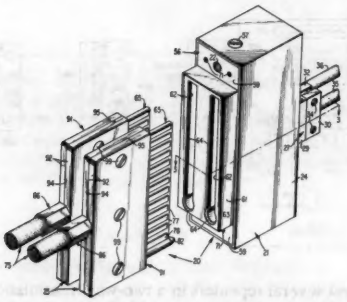
contact with a clamp on one of the battery terminal posts, thereby maintaining a continuous conductive path between the cable and the battery. Manually operable means are provided for selectively moving the conductor shaft out of contact with the battery clamp, against the spring bias, to interrupt the conductive path and de-energize the electrical system of the vehicle. A lock for preventing an unauthorized individual from reconnecting the cable to the battery and re-energizing the vehicle's electrical system includes a spring biased bolt which is automatically operable upon retraction of the conductor shaft to engage the shaft and maintain it out of contact with the battery clamp.

3,692,966

MULTI-CIRCUIT PATCH PLUG AND JACK

Jesse F. Lancaster, Great Fall, Va., assignor to The Cooke Engineering Company, Alexandria, Va.

Filed July 22, 1970, Ser. No. 57,050
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.1 **10 Claims**



A shielded multi-circuit, self normalling, patch plug and jack for developing test boards or patch fields for testing, re-routing, and maintaining multi-circuit electrical systems and substituting equipment in circuits in event of circuit or equipment failure by connecting various multi-lead electrical components of the system, particularly television and like communication systems by circuit patching. Substitution of components can be effected by connection in series with the system or in other commonly known circuitry patterns such as double series, double parallel, normal through, looping, holding loop, or set jack arrangements. The jack provides multiple paired movable contacts spanning respective slot-like plug sockets to engage stationary intermediate stationary contacts and provide a normal through connection of the multiple circuits between a transmitter and receiver. Respective plugs are provided for each socket and comprise multi-circuit cables terminated within the plug in a printed circuit board composed of an elongated generally rectangular body of insulating material the opposite faces of which are provided with respective paired and interconbected strip-like contacts.

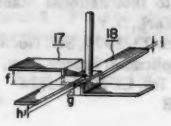
3,692,967

HIGH-FREQUENCY HEATING APPARATUS HAVING ELECTROMAGNETIC WAVE AGITATING DEVICE

Tetsuo Hashimura, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, a. k. a. Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 6, 1970, Ser. No. 78,357
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **7 Claims**

An agitation device for high-frequency electromagnetic waves in a high-frequency oven has at least one pair of planar rotary blades of metal extending in radially opposite directionsfrom a hub part and fabricated, together with the hub part, from a single strip of sheet metal into a staggered or stepped shape in which the blades respectively lie in mutually different offset planes and present minimum profiles with respect to air resistance during rotation, the blades thereby rotating through



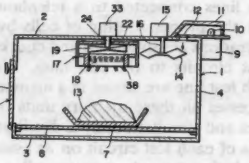
mutually different paths and imparting effective field agitation to prevent occurrence of a high-frequency standing wave and to render uniform the distributive state of the high-frequency waves applied to the oven interior.

3,692,968

ELECTRONIC OVEN

Yoshio Yasuoka, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd.

Filed Feb. 22, 1971, Ser. No. 117,304
Claims priority, application Japan, April 6, 1970, 45/20685; April 6, 1970, 45/20686
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **15 Claims**



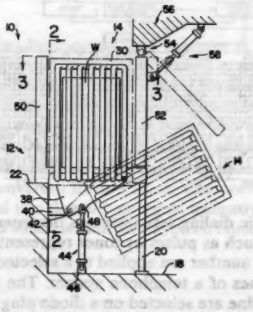
An electronic oven comprising an oven-defining structure equipped with means for effecting the browning action on an object to be heated, said browning means including means for creating a forced circulation of air and a heating assembly, whereby hot air of relatively high temperature can advantageously be directed toward the object so that the browning or scorching action can be performed in a short time as rapidly as the object can be heated solely by the application of high frequency energy.

3,692,969

PIVOTALLY MOVABLE SLAB HEATING UNIT

Robert Jerry Kasper, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 5, 1971, Ser. No. 140,546
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.57 **14 Claims**



Apparatus is disclosed for inductively heating a large metal ingot having a length dimension which is greater than the

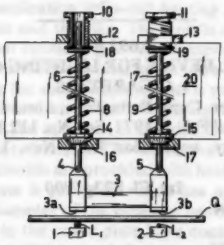
greatest cross-sectional dimension thereof. The apparatus includes support means for an ingot to be heated, and induction heating coil means which surrounds an ingot on the support means. The coil means is pivotally supported relative to the support means for movement between first and second positions relative to the support means. In one of the coil positions the support means is exposed for the removal or placement of an ingot thereon, and in the other of the coil positions the support means and ingot are surrounded by the coil means. Wall means may be provided at opposite ends of the coil means to define therewith and with the support means an enclosure for heating an ingot.

3,692,970

ELECTRIC RESISTANCE WELDING MACHINES

Hans Gott; Klaus Ritter, and Josef Ritter, all of Graz, Austria, assignors to Evg Entwicklungs U. Verwertungsgesellschaft m.b.H., Graz, Austria

Filed March 22, 1971, Ser. No. 126,828
Claims priority, application Austria, March 25, 1970, 2801
Int. Cl. B23k *11/00*
U.S. Cl. 219—56 **5 Claims**



An electric resistance welding machine has several pairs of active electrodes below the work piece, such as mesh, being welded. Above the work piece a current bridge is provided for each pair of active electrodes, the current bridge being lowered in use so that the work piece is gripped at welding points between the active electrodes and the bridge, the welding current flowing from one active electrode, through the work piece at one welding point, across the current bridge, through the work piece of the other welding point, and back to the other of the pair of active electrodes.

The current bridge is pivoted near its two ends on the ends of guided thrust rods which are spring loaded with independent adjustment of the two spring loads, each thrust rod having fixed near one end a spring support which seats in a seating and is accurately located when in contact therewith, the other end of each thrust rod being loosely guided so that the bridge during its work piece engaging movement can perform a limited deflection having both rotary and translational components.

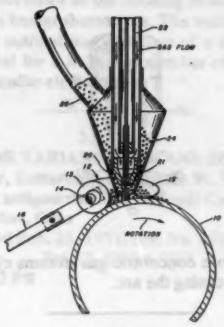
3,692,971

METHOD AND APPARATUS FOR OVERLAYING WELD METAL WHICH PREVENTS THE EMISSION OF NOXIOUS GASES THEREFROM

Glenn E. Knlepkamp, Allegheny, Pa., assignor to United States Steel Corporation

Filed March 25, 1971, Ser. No. 127,903
Int. Cl. B23k
U.S. Cl. 219—73 **10 Claims**

An inert-gas-shielded submerged arc welding process which prevents emission of noxious gases when overlaying aluminum bronze on a steel base.



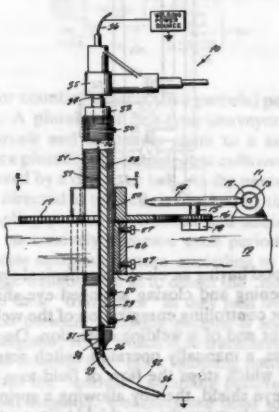
Apparatus is also disclosed for confining granular flux in the proximity of a welding torch when making an overlay on a cylindrical surface.

3,692,972

AUTOMATIC ROTARY WELDING UNIT

Lloyd D. Morton, 241 W. Anoyo, Ajo, Ariz.

Filed March 10, 1971, Ser. No. 122,945
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **1 Claim**



A welding unit for building up the inside of vertical holes that must be subsequently reamed, the device comprising a mechanism utilizing a semi automatic welding machine and which includes means to fasten the end of a feeder cable and nozzle to the top of a rotary ground clamp having a one eight inch hole drilled through the center thereof for a wire to feed therethrough and which passes through the feeder cable mounted on a inside of a threaded shaft and then out of a nozzle.

3,692,973

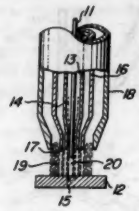
ARC WELDING

Takeshi Oku, Suita; Kazushige Hirasawa, Ikeda, and Yoshimitsu Matsumoto, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 1, 1970, Ser. No. 68,747
Claims priority, application Japan, Sept. 4, 1969, 44/71519
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **14 Claims**

According to the invention, there is provided a method for arc welding, wherein a plasma arch having a high arc energy

density may be obtained without using any solid member directly restraining the flaring of the arc but by effectively utilizing two or more concentric gas streams ejected from the torch nozzle for focusing the arc.



3,692,974

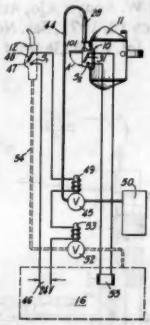
AUTOMATIC WELDING HOOD WITH AUTOMATICALLY POSITIONED EYE SHIELD

James P. Thomason, Jasper, Ga., and Thomas Harold Jennings, 2640 Whitehurst Dr., Marietta, Ga.

Filed Oct. 26, 1970, Ser. No. 83,758

Int. Cl. B23k 9/10, 9/32

U.S. Cl. 219—147 **1 Claim**



A welding hood having an electromechanical system for automatically opening and closing a hinged eye shield located thereon and for controlling energization of the welding gun at the beginning or end of a welding operation. On starting the welding process, a manually operated switch actuates a first solenoid valve which stops the flow of fluid to a piston connected to the eye shield, thereby allowing a spring providing an opposing force to move the eye shield to its protective position in front of the welding operator's eyes. The switch also actuates a second solenoid valve which allows an inert gas to flow through the welding gun. As the eye shield assumes its protective closed position, a microswitch is actuated along with a relay coil, completing a circuit allowing the welding gun to energize. Upon compeltion of the welding process, the eye shield automatically retracts so that the operator may view his work.

3,692,975

FOOD PREPARING SYSTEM FOR PASSENGER CARRYING CONVEYANCES

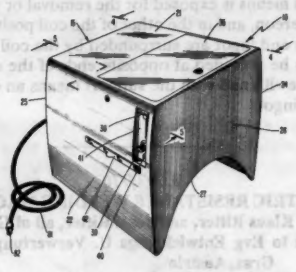
Joseph Markus, 51 Ash Lane, Hicksville, N.Y.; James H. Rowe, 129 Greenway West, New Hyde Park, N.Y.; Kenneth L. Dew, 30-26 Grunstra Place, Fairlawn, N.J., and Edward J. Mystowski, 363 Howard St., Westwood, N.J.

Filed March 26, 1971, Ser. No. 128,317

Int. Cl. B60l 1/08

U.S. Cl. 219—202 **6 Claims**

A food preparing system incorporated into an automobile for use in connection with food products of the type designed to be prepared by heating in a conventional household toaster. The system includes a console which containing a toaster and a food storage unit and is positioned adjacent the instrument panel of the automobile over its transmission and drive shaft hump, and a regulated electrical generating system driven by the automobile's engine and integrated into the conventional electrical system thereof.



3,692,976

ELECTRICAL DEVICE FOR LIGHTING CIGARS AND CIGARETTES

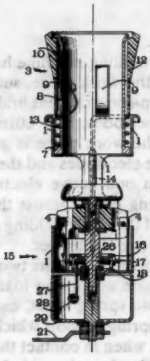
Luigi Pramaggiore, Corso Battaglione, Aosta 14, Italy

Filed Feb. 3, 1971, Ser. No. 112,176

Claims priority, application Italy, Nov. 13, 1970, 70783 A/70

Int. Cl. F23g 7/00

U.S. Cl. 219—264 **12 Claims**

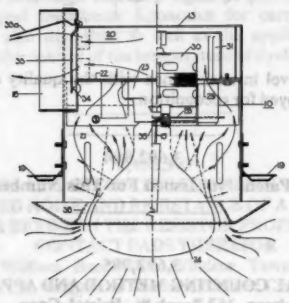


An electrical device for lighting cigars and cigarettes, particularly for mounting on the dashboard of motor vehicles, comprising a cylindrical casing, an electrical heating resistance mounted within the casing so as to be engaged by a cigarette or cigar when the latter is introduced into the casing to light it, switch means permitting the feeding of electric current to the heating resistance to make it red-hot, means for mounting the switch means within the casing, said switch means ensuring the automatic interruption of the feed circuit of the electric heating resistance when the cigarette or cigar has been lit, means for giving an audible indication of such interruption of the feed circuit, and an exchangeable holder at one end of the cylindrical casing for holding the cigar or cigarette to be lit.

3,692,977
COMPACT COMBINATION INFRA-RED HEATING AND VENTILATING UNIT

Ronald E. Duhamel, Middletown, and James E. Hutten, Mason, both of Ohio, assignors to Panacon Corporation, Cincinnati, Ohio

Filed Dec. 23, 1970, Ser. No. 100,868
Int. Cl. F24h 9/02; H05b
U.S. Cl. 219—343 **6 Claims**



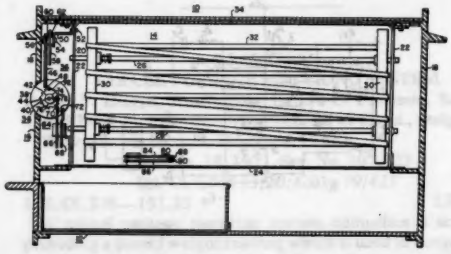
A compact, combination infra-red heating and ventilating unit for bathrooms and the like. The unit is divided into an upper compartment containing all the electrical components, and a lower compartment containing the infra-red lamps. The bulk-head dividing the said compartments is provided with an aperture for the flow of air to the ventilating fan in the upper compartment, and the aperture is shielded from back radiation from the infra-red lamps. The interior of the lower compartment and the shields are provided with heat reflective surfaces. A cover plate is provided which has apertures larger than the outside diameter of the lamps to provide for air flow, and the apertures in the cover plate have contoured edges to reflect peripheral radiation into the room. The upper compartment contains a motor and fan and all the electrical wiring, and is adapted to be connected to a duct for venting to atmosphere. A gravity actuated damper is arranged in the vent opening such that when the fan is not operating, it still permits passage of hot air by convection.

3,692,978
Patent Not Issued For This Number

3,692,979
ELECTRIC COOKER CONTROL

Robert A. Wise, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1970, Ser. No. 92,383
Int. Cl. H05b 1/02
U.S. Cl. 219—493 **2 Claims**

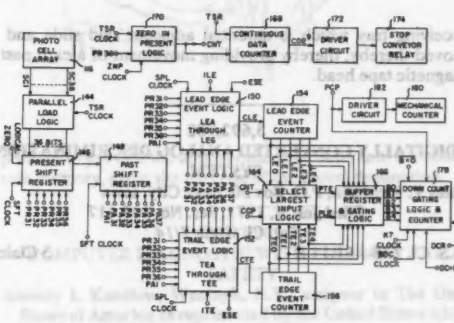


The invention defines a control mechanism for a cooking device that is capable of turning the cooking device off after a selectively variable time has elapsed. The control mechanism utilizes a ratchet wheel operated by a bimetal element which heats up and cools down as the cooking device cycles as determined by a main heater thermostat. The variable cooking time is arrived at by manual manipulation of a dial which presets the ratchet wheel for a desirable number of cycles of operation by the bimetallic element.

3,692,980
COUNTER FOR VARIABLE SIZE AND SHAPE OBJECTS

James A. Getker, Kettering, and Horace W. Weeks, Bellbrook, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 25, 1971, Ser. No. 118,817
Int. Cl. G06m 7/00
U.S. Cl. 235—92 PK **5 Claims**



A counter for counting objects (like parcels) passing over a conveyor belt. A plurality of belt-type conveyors is used to spread the parcels and to deliver them to a sampling line which includes a plurality of photoelectric cells over which the parcels are moved by a conveyor belt. As the parcels pass over the cells, light directed at the cells is blocked by the parcels to provide a sampling pattern of blocked and unblocked cells. Logic circuits successively compare each periodic sampling pattern with prior sampling pattern according to a predetermined set of logic equations so as to detect the "lead edges" of the parcels and their "trail edges" as they pass over the sampling line. Each periodic sampling pattern is loaded into a Present Shift Register, from which it is transferred to a Past Shift Register to become the "prior sampling pattern", which is compared with the "current" sampling pattern present in the Present Shift Register. Counters are used to count the "Lead Edge Events" and the "Trail Edge Events" defined by the logic equations, and the larger of the two counts (if the counts are not equal) is selected as the more accurate count of the parcels on the conveyor. A parcel may cross the sampling line at any position thereon to be counted, and parcels in contacting juxtaposition may also be counted.

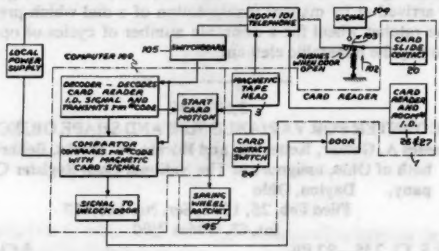
3,692,981
CARD READER

Michael C. Poylo, New York, N.Y., and Karel J. Staller, Rutherford, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 12, 1970, Ser. No. 88,898
Int. Cl. G05l 7/08
U.S. Cl. 235—61.11 D **6 Claims**

A magnetic card reader including a frame having a pair of channels formed therein, and a slide extending partially across the width of the frame mounted in said channels, said slide being connected by wires at its extreme ends to a spring driven rotary unidirectional clutch which urges said slide means in a direction away from said unidirectional clutch. A magnetically controlled ratchet, contacting gears on said rotary clutch con-

trols the rotation thereof, thereby controlling the movement of said slide away from said clutch. The reader includes a card



receiving tray which is mounted adjacent said slide and is moved thereby, thereby providing movement of a card past a magnetic tape head.

3,692,982

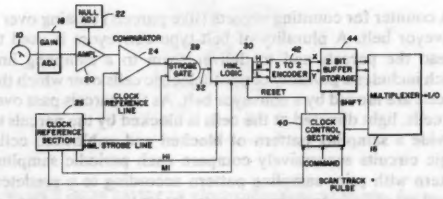
DIGITALLY CONVERTED ANALOG DISCRIMINATION SYSTEM

John V. McMillin, P.O. Box 30, Iowa City, Iowa

Filed Jan. 4, 1971, Ser. No. 103,417

Int. Cl. G06k 7/14

U.S. Cl. 235—61.11 E **3 Claims**



A system for converting an analog light intensity signal from a photo sensor into a four level digital code. The system is used in connection with document scanners which have multiple response channels, each channel providing an analog signal which is then compared to various predetermined reference levels. The digital response produced from each such comparison is stored and the highest level produced during a predetermined cycle is gated out in a digital code. The outputs thus produced from all the channels are then multiplexed onto computer interface lines. The system thus provides for discrimination and selection of predetermined signal levels produced by the multiple channels.

3,692,983

AUTOMATIC THRESHOLD CONTROL CIRCUIT FOR OPTICAL CARD READERS AND SORTERS

Carlo Cucciati, and Pietro Buttafava, both of Milan, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

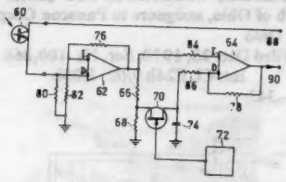
Filed July 12, 1971, Ser. No. 161,582

Claims priority, application Italy, July 14, 1970, 27389 A/70

Int. Cl. G06k 7/14

U.S. Cl. 235—61.11 E **7 Claims**

A punched card optical reader wherein the presence of a hole is determined by the recognition of a signal level greater than a threshold level and the absence of a hole is determined by the recognition of a signal level less than the threshold level, and wherein means is provided to vary the value of the



threshold level in accordance with the quality of the signal levels employed for recognition.

3,692,984

Patent Not Issued For This Number

3,692,985

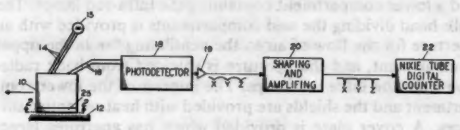
OPTICAL COUNTING METHOD AND APPARATUS

Gabor U. Kalman, 363 Brook St., Bristol, Conn.

Filed Nov. 9, 1970, Ser. No. 87,844

Int. Cl. G06m 11/00

U.S. Cl. 235—92 PK **6 Claims**



The rapid and accurate counting of articles positioned in closely spaced relationship on a support is disclosed. The technique is implemented with the use of a movable detector head employing a linear array of optical fibers, the detector head being designed to provide a low friction sliding contact with the articles to be counted.

3,692,986

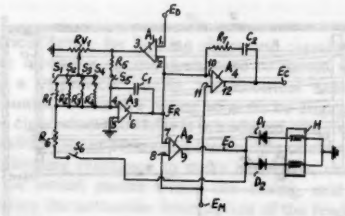
PROCESS CONTROL METHOD AND APPARATUS FOR REGULATING TEMPERATURE

Robert Nienstaedt, Skensved, Denmark, and James William Bunting, Leamington Spa, England, assignors to Courtaulds Engineering Limited

Filed Jan. 5, 1971, Ser. No. 104,112

Int. Cl. G05d 23/00

U.S. Cl. 235—151.1 **15 Claims**



A process control method comprises the steps of generating a first electrical signal representing a measured value of a

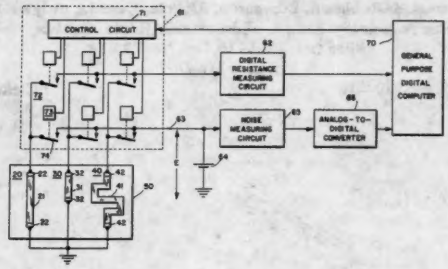
process variable, generating a second electrical signal representing a desired value of said process variable, generating a third electrical signal, which changes at a prechosen rate corresponding to a desired rate of change of said measured value of said process variable, comparing said second electrical signal with said third electrical signal to generate a fourth electrical signal, applying said fourth electrical signal to cause said third electrical signal to tend towards equality with said second electrical signal, and comparing said first electrical signal with said third electrical signal to produce a process control signal therefrom. Apparatus for carrying out the method is also described as well as the application of the method to the control of the temperature of dyebath liquor.

3,692,987

METHODS AND APPARATUS FOR ALLOCATING THE MEASURED NOISE AND RESISTANCE OF A THIN-FILM RESISTOR BETWEEN THE RESISTOR PROPER AND THE CONTACT PADS THEREFOR

Laurence William Bos, West Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,568
Int. Cl. G06f *15/20*; G01r *27/00*
U.S. Cl. 235—151.31 **9 Claims**



Three similar thin-film devices are fabricated in proximate relation on an insulating substrate. Each resistor has conductive contact pads fabricated thereon. The three devices may have different electrical resistances, but congruent areas underlying the contact pads are maintained for all three devices. Noise measurements and computer calculations on all three devices permit allocation of these parameters between the thin-film proper and the interfaces between the thin films and the conductive contact pads.

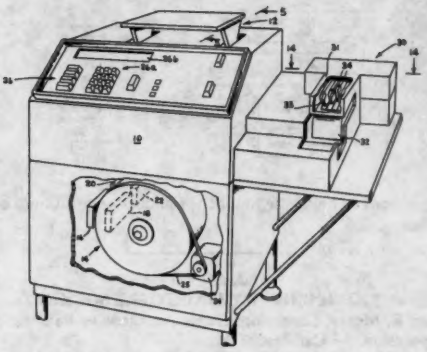
3,692,988

PARCEL POSTAGE METERING SYSTEM

Daniel F. Diugos, Huntington; Gerald C. Freeman, Norwalk, and Peter N. Piotroski, Stamford, all of Conn., assignors to Pitney-Bowes Inc., Stamford, Conn.

Filed Jan. 18, 1971, Ser. No. 107,223
Int. Cl. G06f *15/20*; G01g *19/413*
U.S. Cl. 235—151.33 **23 Claims**

A parcel postage metering system comprises a scale for providing a parcel weight reading which is used in conjunction with the parcel destination (postal zone) to enter a postage memory and obtain the appropriate postage. The thus obtained postage controls apparatus for setting a postage meter to issue a stamp imprinted with the appropriate parcel postage. A zip code to zone conversion memory is incorporated to provide the appropriate zone entry into the postage rate memory, given the zip code of the parcel destination.

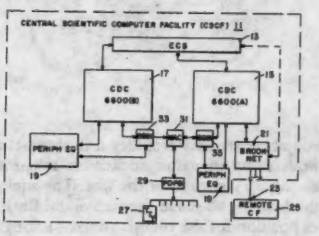


3,692,989

COMPUTER DIAGNOSTIC WITH INHERENT FAIL-SAFETY

Anatoly I. Kandiew, Wantagh, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 14, 1970, Ser. No. 80,651
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 **10 Claims**



Time-saving, effective and efficient diagnostic means and method for the Brooknet shared time computer system for fail-safe operation on a regular job priority basis while the computer system is operating to handle other jobs and without dedicating the entire computer system to the diagnostic function.

3,692,990

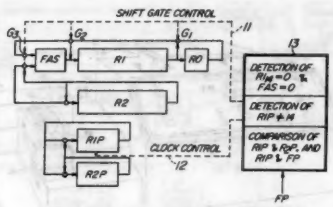
DECIMAL POINT PROCESSING SYSTEM DEALING WITH OVERFLOW

Noriyuki Kurokawa, and Hiroshi Minami, both of Funabashi, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 21, 1970, Ser. No. 39,244
Claims priority, application Japan, May 23, 1969, 44/39594
Int. Cl. G06f *7/38*
U.S. Cl. 235—159 **10 Claims**

A decimal point processing system in a calculator capable of arbitrarily setting the decimal point position for the result of

an operation within the range of digit indication positions given, and also of indicating, with priority, figures of the above



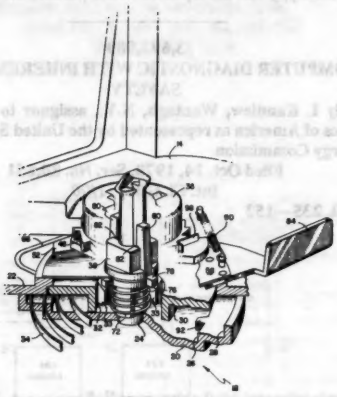
n positions (n being the number of indication positions) being indicated.

3,692,991

FLASH UNIT WITH INDEXIBLE SOCKET

John B. Morse, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1970, Ser. No. 101,337
Int. Cl. G03b *15/03*
U.S. Cl. 240—1.3 **37 Claims**



The subject invention provides a flash unit whose housing accommodates an indexible socket for releaseably receiving and retaining a Flashcube or the like. The socket is indexible within the housing to place the individual flash lamps into an optimum position for the illumination of a subject. The indexing mechanism is manually actuated and is so designed that an indication will be provided after the first fired flash lamp has been placed at its initial index position and means are provided for preventing further indexing of the Flashcube. Additionally, the flash unit is self-contained and incorporates its own power supply.

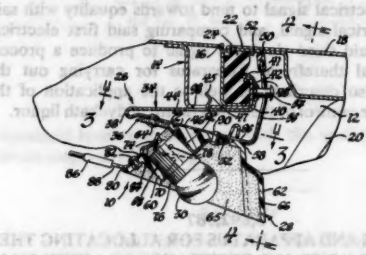
3,692,992

LAMP AND SWITCH ASSEMBLY FOR THE REAR COMPARTMENT OF A MOTOR VEHICLE

Douglas G. Bain, Rochester, and James J. Hartmeyer, St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,807
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **3 Claims**

A lamp and switch assembly for the rear compartment of a motor vehicle wherein a one piece electrically conductive mounting and switching bracket includes a pair of juxtaposed L-shaped sections interconnected by an integral stress loop, one of the sections being snapped onto the compartment periphery in grounding relationship therewith and the other section engaging the compartment lid and being pivotable with respect to the fixed section by elastic yielding and stressing of the loop. A lamp housing including a lamp bulb is mounted on the pivoting section and carries a grounding contact which is resiliently biased against the fixed section to complete an electrical circuit between the lamp bulb and the grounded vehicle body when the lid is open. When the trunk lid is closed, the grounding contact and the pivoting section are carried away from electrical contact with the fixed section to open the electrical circuit or extinguish the light bulb.

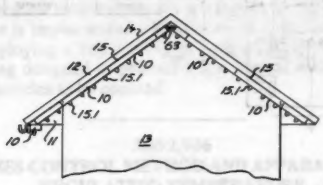


3,692,993

LIGHTING FIXTURE UNIT

Samuel H. Robinson, Edmonton, Alberta, Canada, assignor to Samro Holdings Ltd., Edmonton, Alberta, Canada

Filed Oct. 12, 1970, Ser. No. 79,814
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 **7 Claims**



A lighting fixture unit having a housing adapted to be mounted on a building or similar structure, the housing having an opening in a wall on which a door is mounted for movement between open and closed positions. Electric lights are carried in a holder which is swingable in the housing for moving the lights between a hidden portion in the housing and an exposed position extending through the opening.

3,692,994

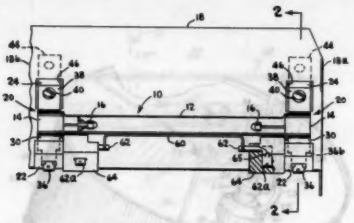
FLASH TUBE HOLDER ASSEMBLY

Howard I. Hirschman, and James C. Evers, Maplewood, both of N.J., assignors to Pitney Bowes-Sage, Inc., Hawthorne, N.J.

Filed April 14, 1971, Ser. No. 134,006
Int. Cl. H01r *33/08*
U.S. Cl. 240—11.4 R **11 Claims**

A flash tube holder assembly includes a reflector for mounting two sets of spaced terminal blocks; one set mounts resilient contact strips to electrically engage and physically hold the terminal ends of a flash tube, while the other set mounts the ends of a trigger wire in longitudinally extending, contiguous

relation to the tube. Each tube terminal block is formed of two sections interconnected by its resilient contact strip, which



sections are manually separable to open the contact strips for tube removal.

3,692,995

ARRANGEMENT FOR PROVIDING A SERIES OF ILLUMINATIONS

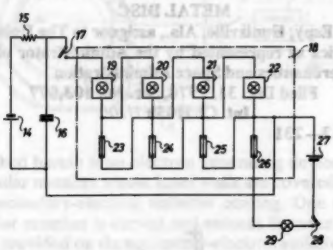
Karl Wagner, Ottobrunn, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 12, 1970, Ser. No. 79,813

Claims priority, application Germany, Oct. 16, 1969, P 19 52 049.1

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 10 Claims



Each photoflash bulb, having a high internal resistance before use and a low internal resistance after use, is connected in series with a respective fuse, succeeding photoflash bulbs being connected in parallel with the fuse of the preceding photoflash bulb, or succeeding photoflash bulbs and fuse being connected in parallel with the fuse of the preceding photoflash bulb.

3,692,996

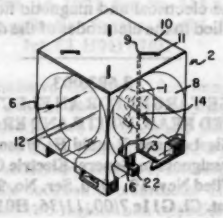
PHOTOGRAPHIC FLASHLAMP UNIT

John W. Shaffer, and Sedgwick R. Bennett, both of Williamsport, Pa., assignors to Sylvania Electric Products Inc.

Filed Nov. 4, 1968, Ser. No. 773,178

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 4 Claims



A flashcube with self-contained members for firing percussive-type lamps disposed therein. Each lamp in the flashcube has its own firing mechanism associated therein in the form of a wire torsional spring.

3,692,997

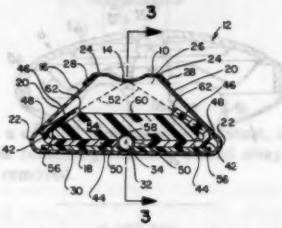
ILLUMINATION APPARATUS

Curtis E. Miller, San Marino, Calif., assignor to Beckman Instruments, Inc.

Filed Feb. 5, 1971, Ser. No. 112,976

Int. Cl. F21v *7/05*; G02b *21/10*

U.S. Cl. 240—2 MA 4 Claims



A darkfield type illumination apparatus for performing slide agglutination tests or the like. The apparatus comprises an elongated casing having an opening therein over which a transparent slide carrying the material to be illuminated is positioned. In the preferred form of the apparatus, a non-reflective surface is provided in the casing below the opening. An elongated light source is positioned below such surface. A pair of angularly bent elongated light conducting members are positioned on opposite sides of the casing with one end of the members located adjacent to the light source and the other end extending upwardly at an angle toward the opening so that rays of light transmitted through the members intersect near the opening to obliquely illuminate the material on the slide. Other configurations of the apparatus are also disclosed.

3,692,998

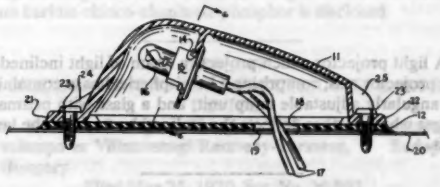
VEHICLE MARKER LIGHT

John F. Adams, 310 Audubon Rd., Fayetteville, N.Y., and Ernest R. Steltzer, Pendergast Rd., Lysander, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,254

Int. Cl. B60q *1/32*

U.S. Cl. 240—8.2 1 Claim



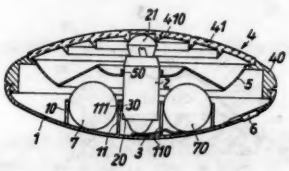
A baseless vehicle marker light comprises a cupped, molded, transparent lens having an integral, transversely-extending flange to which a conventional bayonet-type lamp socket is secured and resilient mounting pad, the lens being adapted to be secured directly to the vehicle body.

3,692,999

POCKET FLASH LIGHT

Reinhard Napierski, Oberursel, and Claus Christian Cobarg, Steinbach, both of Germany, assignors to A.G. Braun, Frankfurt am Main, Germany

Filed Dec. 10, 1970, Ser. No. 96,764
Claims priority, application Luxembourg, Dec. 19, 1969, 60,055
Int. Cl. F21l 7/00
U.S. Cl. 240—10.65 10 Claims



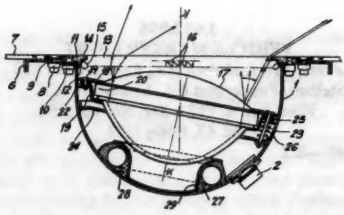
A pocket flash light having a movable casing, a cover glass forming a part thereof and a bulb. Two part receiving means including a socket, one part secured to the casing so as to secure the bulb base, while the other part forms a collar to engage the head of the bulb and is second to the cover.

3,693,000

LIGHT PROJECTORS

Claude Andre Picard, Paris, France, assignor to Tissmetal Lionel-Dupont, Lyon, Rhone, France

Filed Dec. 3, 1971, Ser. No. 204,561
Claims priority, application France, Dec. 7, 1970, 7043859
Int. Cl. F21v 7/00
U.S. Cl. 240—41.6 6 Claims



A light projector which projects a beam of light inclined to the projector axis, comprising a hemispherical base containing an angularly adjustable lamp unit, and a glass with prismatic ridges which further deflects the inclined beam from the lamp unit.

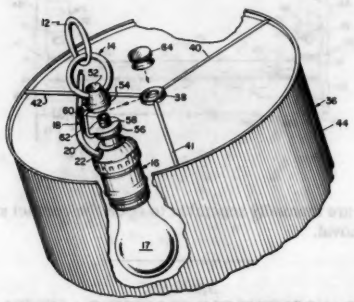
3,693,001

APPARATUS FOR MOUNTING LAMP SHADES ON HANGING LAMPS

John B. Rogers, The Lamp Shop, Brookfield Center, Conn.

Filed April 1, 1971, Ser. No. 130,347
Int. Cl. F21v 17/06
U.S. Cl. 240—128 5 Claims

A C-shaped member interposed between the terminal link of a chain in a hanging lamp and an electric socket embraces a hub mounting zone. The threaded mounting stud of the socket



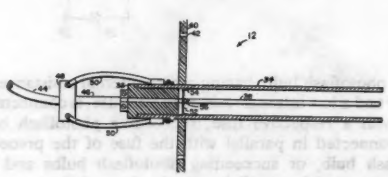
protrudes into the zone to receive the apertured mounting hub of a standard lamp shade.

3,693,002

COAXIAL HIGH DENSITY, HYPERVELOCITY PLASMA GENERATOR AND ACCELERATOR WITH IONIZABLE METAL DISC

Patrick N. Espy, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,077
Int. Cl. H05h 1/100
U.S. Cl. 313—231 2 Claims



A coaxial, high density, hypervelocity plasma generating and accelerating device having a tubular outer electrode and a rod-like central electrode. A foil disc mounted over the central electrode extends radially outward to the outer electrode so as to bridge the electrode gap and form a shorting path therebetween. A capacitor bank is connected across the electrodes and it discharges through and ionizes the foil disc to produce a dense plasma or ionized particles. The plasma is accelerated by the electrical and magnetic fields set up when a potential is applied to the electrodes of the device.

3,693,003

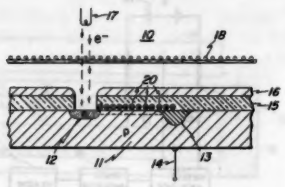
STORAGE TARGET FOR AN ELECTRON-BEAM ADDRESSED READ, WRITE AND ERASE MEMORY

Raymond A. Sigsbee, and Ronald H. Wilson, both of Schenectady, N.Y., assignors to General Electric Company

Filed Nov. 19, 1970, Ser. No. 91,053
Int. Cl. G11c 7/00, 11/36; H01j 1/78
U.S. Cl. 313—68 R 10 Claims

A storage target for a read, write and erase memory is disclosed utilizing a semiconductor memory storage element.

The storage of information relies on charge storage to create or pinch off a conductive channel between an internal con-



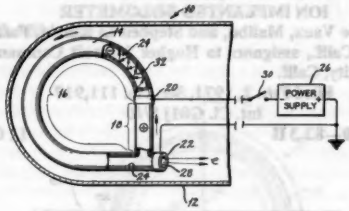
ductive electrode and isolated diode junctions. An electron beam, irradiating each storage area, is used for reading, writing and erasing.

3,693,004

REFLEX TYPE ELECTRON MULTIPLIER

Emil E. Sanford, Montclair, N.J., assignor to Monsanto Company, St. Louis, Mo.

Filed July 1, 1970, Ser. No. 51,476
Int. Cl. H01j *43/00, 43/16*
U.S. Cl. 313—103 1 Claim



Described herein is an electron generating device comprising a tubular member whose inner walls are covered with a resistive, secondary-electron emissive coating. One section of the tubular member is curved and extends between electrical contacts provided on the secondary-electron emissive coating. Another section of the tubular member is substantially straight. It too, extends between the electrical contacts, and forms, together with the curved section, a continuous, reflex-type particle path around the tubular member. An electron exit aperture is provided near one of the contacts and a D.C. power supply is connected to the contacts. Electrons are multiplied or amplified along the curved section of the tubular member and resulting positive ions are fed back along the straight section to liberate further electrons for amplification. Electrons egress through the exit aperture in a defined path. For enhanced electron beam generation, a tubular, toroidal-shaped embodiment of the invention is also described.

3,693,005

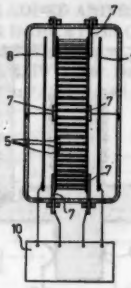
SECONDARY-EMISSIVE ELECTRODE

Gerard Clement, Pairs, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,637
Claims priority, application France, April 6, 1970, 7012321
Int. Cl. H01j *43/02*
U.S. Cl. 313—103 3 Claims

A secondary emissive electrode for image intensifiers, cathode-ray tubes and the like which comprises a plate of insulating material having two substantially parallel boundary surfaces on opposite sides thereof pierced by channels, the walls of which are secondary emissive, forming a high-density network of channels between two surfaces. The periphery of this plate has at least two regions one opposite the other relative to the center of the body with channels which are filled with a core material.

In the manufacture of such an electrode, all channels are initially filled with a material which can be etched away by an acid. Those channels in the regions of the periphery are



covered with a coating which is etch resistant, and the core material in the remaining channels etched away after which the coating is removed.

3,693,006

LAMP EMPLOYING LUMINESCENT MANGANESE-ACTIVATED STRONTIUM BARIUM CHLORO-ALUMINATE PHOSPHOR COMPOSITIONS

Charles F. Chenot, Towanda, Pa., assignor to Sylvania Electric Products Inc.

Division of Ser. No. 58,241, July 27, 1970, Pat. No. 3,649,550.
This application June 22, 1971, Ser. No. 155,508
Int. Cl. H01j *61/44*
U.S. Cl. 313—109 5 Claims

Cerium sensitized, manganese-activated strontium barium chloro-aluminate phosphor compositions are disclosed wherein the formula for the phosphor can be characterized as follows:

$$Sr_xBa_yCl_zAl_2O_{4-z/2}:Mn_uCe_w$$

wherein the sum of x and y is between 0.87 to about 0.95, z is between about 1.03 to about 1.16, u and w are each from about 0.005 to 0.05. A process for producing the phosphor composition is also disclosed wherein sources of strontium, barium, chloride, aluminate, manganous and cerous ions are uniformly admixed by blending and heated under controlled temperature conditions for a time sufficient to produce the luminescent phosphor composition. Additionally, an improved lamp utilizing a cerium-sensitized, manganese-activated strontium barium chloro-aluminate phosphor is disclosed.

3,693,007

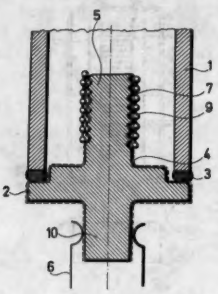
OXIDE CATHODE FOR AN ELECTRIC DISCHARGE DEVICE

Bela Kerekes, Budapest, Hungary, assignor to Egyesult Izzolampa es Villamossagi Reszveny-Tarsasag, Budapest, Hungary

Filed May 25, 1970, Ser. No. 39,991
Int. Cl. H01j *5/48*
U.S. Cl. 313—318 3 Claims

Gas discharge device having a ceramic bulb or body at least one end of which carries a cathode comprising a closure member made of ceramic material, silica or glass, which is at least partly covered by at least one metallic layer, an electron emitting layer, formed by at least one alkaline earth metal oxide, being provided on the surface of at least a portion of the

metallic layer. The closure member is united with the bulb or body in a vacuum-tight manner so that a part thereof is inside the bulb or body, the metallic layer extending to that part of



the closure member which is inside the device, to that which is outside the body, the electron emitting layer being provided on at least a part of the metallic layer within the bulb or body.

3,693,008

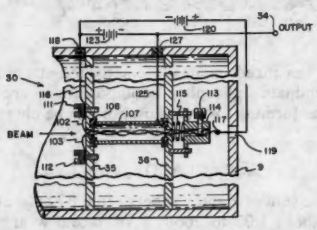
MOLECULAR FREQUENCY STANDARD

Helmut W. Hellwig, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 721,776, April 16, 1968, Pat. No. 3,578,968. This application March 17, 1970, Ser. No. 24,966

Int. Cl. G01n *27/78*; H01s *1/00*

U.S. Cl. 250—41.3 **2 Claims**



A molecular beam detector for a molecular beam tube frequency standard using a barium oxide molecule of the form $Ba^{138}O^{16}$ having spinless atoms and using electrostatic state selection, which detector comprises a heated elongated member stretched along the axis of the beam tube and arranged to intercept beam particles over a focal region extending along the length of the said member. Ions are formed in the vicinity of the elongated member and are collected by electrode means maintained negative with respect to said member.

3,693,009

IONIZATION SMOKE DETECTING DEVICE

Koju Sasaki, Tokyo, Japan, assignor to Nittan Company Limited, Tokyo, Japan

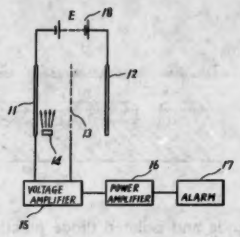
Continuation of Ser. No. 880,023, Nov. 26, 1969. This application April 13, 1971, Ser. No. 133,767

Claims priority, application Japan, Dec. 24, 1968, 43/94181

Int. Cl. G01n *23/12*

U.S. Cl. 250—43.5 D **1 Claim**

An ionization smoke detector having a single ionization chamber, a pair of spaced electrodes in said chamber, a grid electrode between said spaced electrodes and a radioactive source within the chamber. A potential is applied between the



spaced electrodes and means are connected between one of the spaced electrodes and the grid electrode to detect potential changes in the grid produced by the presence of smoke.

3,693,010

Patent Not Issued For This Number

3,693,011

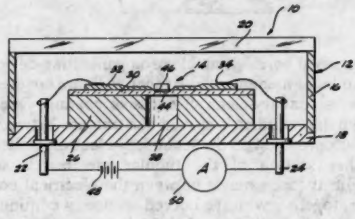
ION IMPLANTED BOLOMETER

Lloyd H. De Vaux, Malibu, and Stephen L. Kurtin, Pasadena, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 2, 1971, Ser. No. 111,917

Int. Cl. G01j *5/10*

U.S. Cl. 250—83.3 H **11 Claims**



The bolometer comprises an insulator material having sufficient metal ions implanted therein to provide a zone of electrical resistivity. Resistance of the implanted zone is a function of temperature, which temperature is a function of the intensity of incident electromagnetic radiation. Electrical connections are made thereto and a bias voltage can be applied so that current therethrough indicates temperature. The implanted bolometer can be a thin device for low thermal capacity, or can be part of or attached to a lens in an optical system.

3,693,012

PASSIVE SOURCE OF SECONDARY RADIATION WITH A SOURCE-SHIELD GRID

Robert W. Schmieder, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

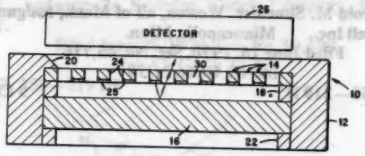
Filed Jan. 22, 1971, Ser. No. 108,827

Int. Cl. G21h *5/00*; G21f *5/02*

U.S. Cl. 250—106 S **6 Claims**

A secondary radiation source including a source-shield grid comprised of a thin layer of radioactive source material coated on one side of a grid of radioactivity shielding material, and a sample positioned facing the radioactive material. A radiation detector is positioned facing the shielding material. Radiation from the source material is unimpeded in the direction of the sample but is blocked from the detector by the

shielding material. Radiation from the source material strikes the sample and excites it to emit secondary radiation characteristic of the sample. Open spaces in the grid provide a relatively unimpeded path from the sample to the detector.

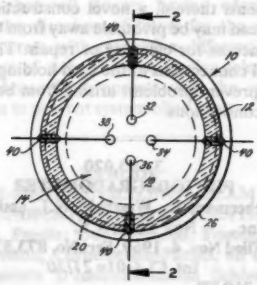


3,693,013

VIDEO TRACKING, LATERAL PHOTOEFFECT SEEKING ELECTRO-OPTIC DETECTOR

James E. Dueker, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 18, 1970, Ser. No. 38,383
Int. Cl. G01j 1/20
U.S. Cl. 250—203 R 5 Claims



Detector means for use in imaging tubes such as a vidicon imaging tubes, said detector means being constructed as a layered element including a layer of semi-conductor material having a transparent or semi-transparent conducting barrier forming layer in intimate contact with one of the surfaces thereof, a plurality of spaced ohmic contacts on the opposite surface of the semi-conductor layer from the barrier layer, respective output connections to said spaced contacts in which signal responses are produced when incident light impinges on the barrier forming layer, a peripheral connection extending around the conducting layer and in contact with the conducting and semi-conductor layers, and a load circuit connected to said peripheral connection in which video output signals generated in the peripheral connection are produced. The subject detector means are particularly suitable for use with image forming optical systems or devices and with other means which scan the surface of the semi-conductor layer opposite from the surface on which incident light impinges to produce a video output for some purpose.

3,693,014

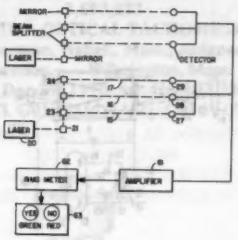
Patent Not Issued For This Number

3,693,015

SYSTEM FOR MONITORING AIR VORTICES COMPRISING PLURAL SCHLIEREN DETECTORS WITH OUTPUT SIGNALS ADDED AND RMS VALUE OF SUM PRODUCED FOR INDICATION OF TURBULENCE

Buford H. Funk, Jr., 213 Wingate Ave. S.W., Huntsville, Ala.

Filed Jan. 8, 1971, Ser. No. 104,882
Int. Cl. G01n 21/26, 21/46; G08g 5/00
U.S. Cl. 250—209 5 Claims



A laser schlieren system provides a means for monitoring the strength of air disturbances such as vortex wakes near aircraft runways. A plurality of lasers and a plurality of photodetectors are located on opposite sides of a runway or its approach flight path whereby each laser directs a laser beam perpendicular to the path of the aircraft into a photodetector. The photodetector has a knife edge placed in front of it whereby the schlieren deflections of the beam by air disturbances causes a definite change in the electrical signal from the photodetector which change indicates the degree of disturbance.

3,693,016

SEMI-CONDUCTIVE APPARATUS FOR DETECTING LIGHT OF GIVEN FLUX DENSITY LEVELS

Paul E. Weber, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

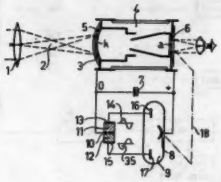
Continuation of Ser. No. 817,749, April 21, 1969, abandoned.
This application May 24, 1971, Ser. No. 146,563
Int. Cl. H01l 15/00
U.S. Cl. 250—211 J 7 Claims

Apparatus for detecting light having at least a given flux density level and for discriminating between light of said given level and all other low levels of light regardless of their total illumination flux value. The apparatus comprises a PNP silicon conductor sandwich having a front side consisting of a photodiode and a back side consisting of a conventional diode. A battery and resistor are serially connected to the integrated circuit combination, and a signalling current flows through the resistor only when light having at least said given flux density level impinges a target surface of the photodiode.

3,693,017
POWER SUPPLY FOR IMAGE CONVERTER

Franz Fick, Kiefernberg 19, 21 Hamburg-Harburg, and Otto Kobelentz, 63, Schmickshohe 4c, 2 Hamburg, both of Germany

Filed Feb. 22, 1971, Ser. No. 117,637
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT 6 Claims

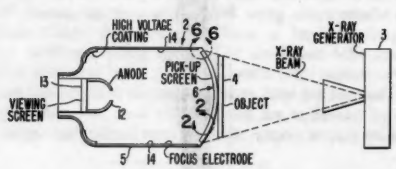


A viewing apparatus which includes an image converter tube having a cathode and a phosphorous screen for visual observation is powered by a pair of piezoelectric converters circuitly arranged with a common connection to the cathode of the image converter tube and with each having a second connection to the anodes of a high-vacuum rectifier; the high-vacuum rectifier also includes a photo-cathode which is disposed in light receiving arrangement with the phosphorous screen of the image converter tube; a capacitor is disposed in parallel connection with said piezoelectric converters and said high-vacuum rectifier across the cathode and phosphorous screen of the image converter tube so that the piezoelectric converters and the high-vacuum rectifier when activated build up a charge across the capacitor for powering the image converter tube.

3,693,018
X-RAY IMAGE INTENSIFIER TUBES HAVING THE PHOTO-CATHODE FORMED DIRECTLY ON THE PICK-UP SCREEN

William E. Spicer, Portola Valley, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 27, 1966, Ser. No. 606,513
Int. Cl. H01j 31/50
U.S. Cl. 250—213 4 Claims

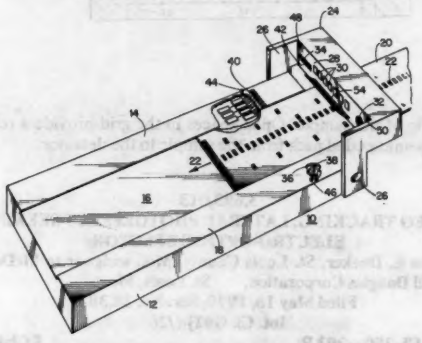


The present invention relates in general to x-ray image intensifier tubes and, more particularly, to an improved intensifier tube wherein the photo-cathode is formed directly on the x-ray sensitive phosphor pick-up screen without provision of an intermediate buffer, whereby the sensitivity of the x-ray intensifier tube is increased. Such improved x-ray image intensifier tubes are expecially useful for, but not limited in use to, x-ray systems and for intensifying gamma ray images obtained in applications of nuclear medicine.

3,693,019
FIBER OPTIC MARK SENSE READ HEAD, MECHANICALLY FREE FROM ELECTRICAL CONNECTIONS

Edward P. Grenda, Boston; Jacques Guiguizian, Haverhill, and Harold M. Shneider, Weston, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 16, 1970, Ser. No. 46,716
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D 9 Claims

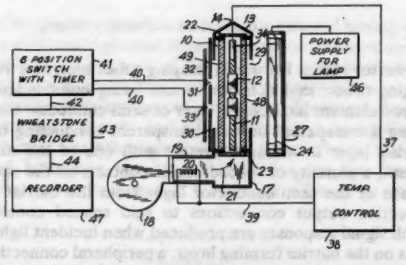


In a mark sense card reader having a read head with light sensitive elements therein, a novel construction is provided whereby the head may be pivotable away from the reading station for easy access for cleaning or repair. The head is free from electrical connections to the card holding tray and reading station to prevent problems arising from bending or twisting electrical connections.

3,693,020
PHOTODEGRADOMETER

Hervey W. Ackerman, Jr., Westfield, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,827
Int. Cl. G01n 21/30
U.S. Cl. 250—219 FR 10 Claims



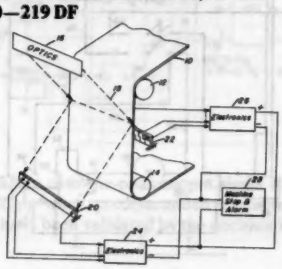
Methods and apparatus are provided for the simultaneous impartation and measurement of photoinitiated degradation of a plurality of resin samples by the application thereto of actinic radiation while continuously measuring the radiation passing through the resins so as to determine constantly the effectiveness quantitatively of different stabilizer components contained in the resins from initial exposure through the maximum rate of discoloration, and during a period of time substantially reduced from corresponding conditions produced under natural weather conditions. In addition, single means are provided for producing the radiation and the photodegradation, as well as means for constantly monitoring and measuring the radiation intensity alone and the degrading effects thereof on the resin samples, and under constantly maintained temperature conditions.

3,693,021

WEB INSPECTION SYSTEM USING INTERLACED PHOTOCELLS

Alvin E. Lake, Jr., 45 Imperial Circle, Rochester, N.Y., and Allen C. Mercer, 6993 Fourth Section Rd., Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 29, 1970, Ser. No. 50,499
Int. Cl. G01h 21/32
U.S. Cl. 250—219 DF 7 Claims



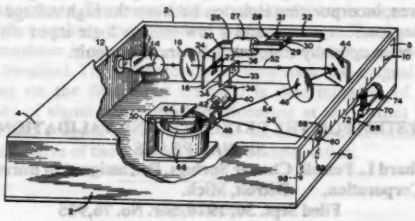
A movable web which is both specular an transparent is checked for defects by beaming a sheet of radiation at the web; and such radiation has an angle of incidence, with respect to the web, which is sufficient to permit some radiation to be mirrored off the web, and some to be transmitted through the web. Respective arrays of photocells cooperate with the reflected and transmitted radiation, and the photocells of such arrays, are jigsawed and interlaced together by means of photocell fingers having edges which are orthogonal to the direction of travel for the web. Pairs of photocells cooperate with respective differential devices to cancel the effect of web vibration to give false alarms; and non-adjacent photocells cooperate with the respective differential devices to prevent system blind spots.

3,693,022

REGULATOR-METER UTILIZING A BEAM OF LIGHT FOR INDICATION AND REGULATION

Michel Dumast, Pantin; Guy Rouzaud, Fontenay-aux-Roses, and Luc Thevenin, Cornellles-en-Parisis, all of France, assignors to Societe D'Instrumentation Schlumberger, Paris, France

Division of Ser. No. 841,695, July 14, 1969, Pat. No. 3,606,151. This application Sept. 3, 1970, Ser. No. 69,294
Int. Cl. G01d 5/30
U.S. Cl. 250—230 3 Claims



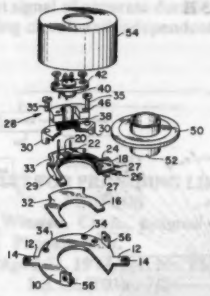
Regulator-meter apparatus includes signal-responsive meter mechanism for projecting a light spot onto a transparent screen such that the spot traverses the screen during signal-caused movement of the mechanism. The position of the spot on the screen is detected by two photosensitive elements which define one set point for the regulator portion of the apparatus, the elements being spaced apart a distance slightly greater than the corresponding cross-sectional dimensions of the spot and having the outputs thereof connected to different ones of the set and reset inputs of a bistable multivibrator. The bistable assumes either its set or reset state depending upon the position of the spot relative to the elements. Circuitry is provided for effecting initial full-scale energization and de-energization of the mechanism, causing the bistable to assume a known initial state, for example, the reset state. The cross-sectional shape of the spot is defined by a suitably apertured mask, mounted so as to be responsive to the displacements of both a proportional-effect and an integral-effect bimetallic element.

3,693,023

ELECTRO-OPTICAL TACHOMETER

Seymour N. Wasserman, Natick, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Dec. 29, 1970, Ser. No. 102,326
Int. Cl. G01p 3/36, 13/00; G01d 5/38
U.S. Cl. 250—231 SE 5 Claims



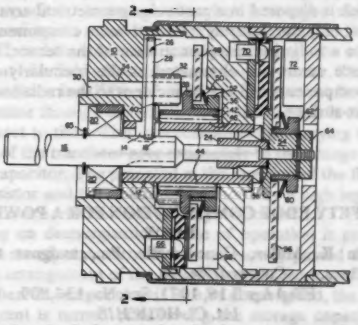
An electro-optical tachometer easily connected to apparatus the rotatable shaft of which is to be monitored and capable of providing an accurate output signal representative of shaft speed. A rotatable disc attached to the shaft to be monitored is cooperative with a stationary reticle to provide an interference pattern which is sensed by a plurality of photosensors which produce one or more output signals representative of the speed of the shaft and the rotational sense thereof.

3,693,024

ROTATIONAL SHAFT ENCODER HAVING A BEARING TUBE HAVING A SLOT THEREIN

Robert M. Hulle, Calabasas; Jerry L. Steward, Simi, and Merle D. Borman, Tarzana, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 17, 1971, Ser. No. 144,073
Int. Cl. G01d 5/34, 5/36
U.S. Cl. 250—231 SE 12 Claims



A rotational shaft encoder having two encoder discs mounted to rotate at different speeds in a preselected ratio determined by a gear train where the transmission of motion from an input shaft, carrying the high-speed encoder disc, to a

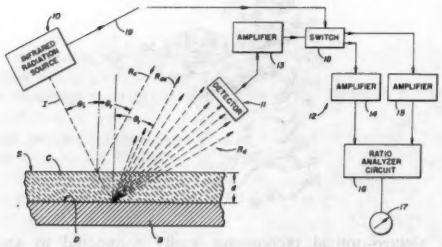
low-speed encoder disc. The low-speed encoder disc is mounted on a bearing tube which houses the input shaft and is driven by a gear train which extends through a slot in the bearing tube to mesh with a gear integrally mounted on the input shaft.

3,693,025

APPARATUS AND METHOD FOR ELIMINATING INTERFERENCE ERRORS IN DUAL-BEAM INFRARED REFLECTION MEASUREMENTS ON A DIFFUSELY REFLECTING SURFACE BY GEOMETRICAL ELIMINATION OF INTERFERENCE-PRODUCING SPECULARLY-REFLECTED RADIATION COMPONENTS

Donald C. Brunton, Columbus, Ohio, assignor to Brun Sensor Systems, Inc., Columbus, Ohio

Filed Nov. 28, 1969, Ser. No. 880,543
Int. Cl. G01n *21/32*
U.S. Cl. 250—83.3 H **10 Claims**



Interference error elimination is provided for infrared reflection measurement of a film having a diffusely reflecting surface by apparatus and method which utilizes geometrical arrangement of apparatus components for geometrical selection of only diffusely reflected radiation components and elimination of specularly reflected radiation components that would produce interference error. A specific application of this measurement technique is in connection with a two-layer, sheet-form product having a film of infrared-radiation-transmissive material formed on a substrate or base layer with the interface surface being diffuse. A radiation source forms and directs two beams of infrared radiation of discrete wavelengths in angularly incident relationship toward an exposed, specular surface of the film producing reflective-components at both the specular surface and the diffuse interface surface. Only diffusely reflected components of incident beams of radiation are detected by a radiation-responsive sensor which is disposed in a particular geometrical arrangement such that only the diffusely reflected beam components are incident to a radiation receptor surface of the sensor. Thus, interference errors are eliminated as the specularly reflected beam components will not be incident to the radiation sensors receptor-surface.

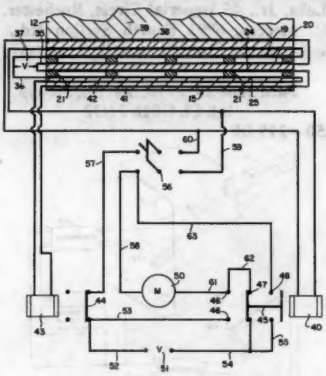
3,693,026

SAFETY EDGE CONSTRUCTION FOR A POWERED DOOR

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed April 16, 1971, Ser. No. 134,809
Int. Cl. H01h *3/16*
U.S. Cl. 307—119 **6 Claims**

For a door electrically powered by a reversible motor, a pair of elongate resiliently compressible edge assemblies having respective pairs of contacts, the contacts of each pair being engageable with each other upon compression of the assemblies, as by encountering an obstruction, and the contact pairs



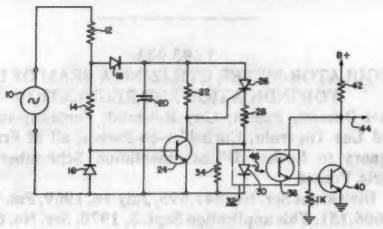
being sequentially operable and electrically connected to sequentially deenergize a door motor and reenergize the motor in the opposite direction.

3,693,027

ZERO CROSSING DETECTOR

Mark W. Garaway, Allison Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1971, Ser. No. 185,200
Int. Cl. H03k *17/60, 17/72*
U.S. Cl. 307—133 **8 Claims**



A zero crossing detector for generating a pulse at every other zero crossing of a high voltage alternating current source, incorporating isolation between the high voltage alternating current source and a low voltage logic input with the use of an optically coupled diode-transistor pair.

3,693,028

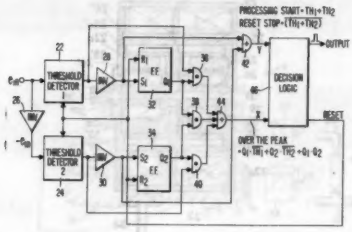
SYSTEM FOR THE DETECTION AND VALIDATION OF SIGNAL PEAKS

Richard L. Fussell, Chester Springs, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1970, Ser. No. 76,905
Int. Cl. H03k *5/08, 5/153, 17/30*
U.S. Cl. 307—235 **8 Claims**

A signal peak detection system is disclosed which in a preferred embodiment utilizes the initial actuation of one of a pair of regenerative threshold detectors by an input analog signal, the actuated detector providing threshold information to decision logic for initiating signal analysis processing at a suitable time prior to the occurrence of the signal peak. The system also includes storage units responsive to the respective states of the detectors, and gating circuits for providing an indication of the occurrence of an over-the-peak condition. Depending upon the nature of the input signal, such indication

results either from the recovery of the detector initially actuated, or by the concurrent actuation of both detectors as reflected by the presence of output signals from the associated storage units. An over-the-peak output signal is generated by the system only when predetermined characteristics of the input signal have been validated by the decision logic.

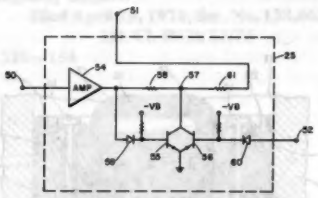


3,693,029

ELECTRICAL COMPENSATION CIRCUIT UTILIZING TWO TRANSISTORS CONNECTED IN PARALLEL

Francis J. Niven, Jr., 7807 Meadowcroft, Houston, Tex.

Division of Ser. No. 684,849, Nov. 21, 1967, Pat. No. 3,538,329. This application June 26, 1970, Ser. No. 59,861
Int. Cl. G01t 1/17
U.S. Cl. 307—237 **1 Claim**



A pair of transistors are connected in parallel with the emitters of the transistors connected to ground and the collectors connected together and to a common junction which in turn is connected through a resistor to an output terminal. A first input terminal is connected through an amplifier and a resistor to the common junction. The output of the amplifier is also connected through a diode to the base of the first transistor. The base is also connected through a resistor to a negative biasing voltage. The base of the second transistor is connected through a resistor to a negative biasing voltage. The base of the transistor is also connected through a diode to a second input terminal. The transistors are biased such that a signal appearing on the first input terminal is determinative of the amount of signal compensation appearing at the output terminal and a signal appearing at the second input terminal is determinative of the existence of the compensation.

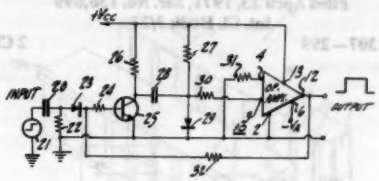
3,693,030

TIME DELAY CIRCUITS

William R. Walters, Medford, N.J., assignor to Radio Corporation of America

Filed May 17, 1967, Ser. No. 639,186
Int. Cl. H03k 3/10
U.S. Cl. 307—273 **7 Claims**

A time delay circuit is described which uses an operational amplifier as a main active element. A switching transistor and a timing circuit are coupled to the amplifier such that the transistor is normally in a non-conductive or high impedance state. The transistor is operated by the combination of the timing circuit and amplifier so that the transistor, when made by a trigger input to assume its conductive or low impedance state, remains in that state causing the operational amplifier to produce an output signal of accurate duration primarily determined by the timing circuit and independent of the trigger input.

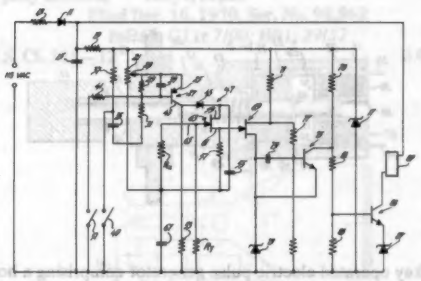


3,693,031

TIMING CIRCUIT FOR PROVIDING LINEAR TIMING PERIODS

Favre E. Eaton, Winsted, Conn., assignor to General Time Corporation, Phoenix, Ariz.

Filed April 21, 1971, Ser. No. 135,837
Int. Cl. H03k 17/26
U.S. Cl. 307—293 **8 Claims**



An electronic timing circuit for generating linear timing periods by providing a constant current discharge path from a storage capacitor. A storage capacitor is charged through a gating transistor to a preset level. The gating transistor is then turned off, and the capacitor discharges through the serial arrangement of a field-effect transistor and a resistor. The field-effect transistor is self-biased such that the current flow from the capacitor through the transistor to the resistor is constant with respect to time. This is accomplished by varying the impedance of the transistor proportionately to the charge on the storage capacitor. The potential at the junction of the field-effect transistor and the resistor is detected by a high input impedance device which drives an output circuit.

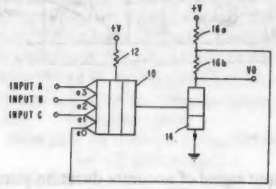
A delay on deenergization mode of operation is provided wherein a steady state current is continuously passed through the serial arrangement of the field-effect transistor and the resistor. When the output circuit is to be deenergized, the steady state current is turned off allowing the storage capacitor to discharge for a linear period of time at the end of which the output is deenergized. The duration of the discharge or timing interval may be adjusted by varying the bias at the gate of the FET.

3,693,032

ANTISATURATION TECHNIQUE FOR TTL CIRCUITS

James R. Winnard, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 23, 1971, Ser. No. 136,699
Int. Cl. H03k 3/26
U.S. Cl. 307—299 2 Claims



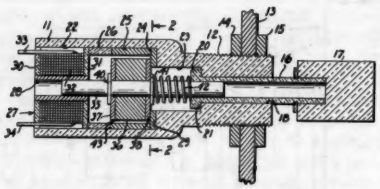
This specification discloses a technique of saturation control for a transistor transistor logic (TTL) circuit. The saturation control device includes an additional emitter of the input transistor which is connected to the collector of the output transistor.

3,693,033

KEY OPERATED PULSE GENERATING DEVICE

Donald L. Troesh, Ontario, Calif., assignor to Electromechanisms, Inc., Azusa, Calif.

Filed June 24, 1971, Ser. No. 156,318
Int. Cl. H02k 35/00
U.S. Cl. 310—14 4 Claims



A key operated electric pulse generator comprising a housing of non-magnetic material supporting depressible key at one end, a coil at the other end, and a body of magnetic material spaced from the coil. A permanent magnet is supported in the housing for movement between the magnetic body and the coil and is normally magnetically attracted to the magnetic body. A spring is interposed between the permanent magnet and the depressible key so that upon depression of the key the spring will yield a certain amount and then cause the magnet to abruptly release from the magnetic body and be impelled toward the coil to generate an electric signal.

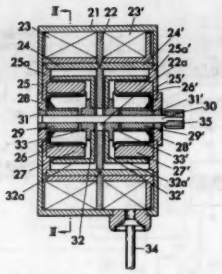
3,693,034

PULSE MOTOR ASSEMBLY

Tokuzo Inariba, Tokyo, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho, Nishikasugai-gun, Aichi Prefecture, Japan

Filed April 6, 1971, Ser. No. 131,760
Claims priority, application Japan, April 7, 1970, 45/29214
Int. Cl. H02k 37/00
U.S. Cl. 310—49 5 Claims

A pulse motor assembly comprising a plurality of synchronous motors connected in tandem. Each of the synchronous motors includes a rotor having pole teeth each tapering towards its free end which is formed as a sharp pointed end. The north and south poles of permanent magnet stator included in the respective synchronous motors are staggered from each other by a distance equivalent to one pole pitch divided by the number of the synchronous motors connected.

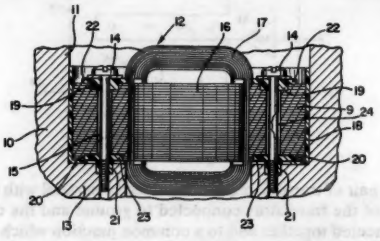


3,693,035

DOUBLE INSULATED FIELD MOUNTING FOR UNIVERSAL MOTOR

Erich Ostwald, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 15, 1970, Ser. No. 72,372
Int. Cl. H02k 5/08, 3/30
U.S. Cl. 310—51 8 Claims



A double insulated heavy duty electric power tool having a metal housing for resisting shock impacts and vibration, and a universal electric motor mounted in the housing. The motor includes a field mounted in the housing with an insulating barrier between the field and the housing. A plurality of insulated bolts secure the field to the housing and a pair of insulating washers associated with each of the bolts maintain a space between the field and the bolts during the after assembly.

3,693,036

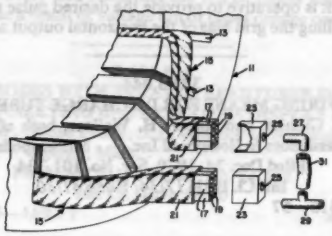
LIQUID COOLED SERIES LOOP CONNECTOR

Nikolas Schmitt, Scotia, N.Y., assignor to General Electric Company

Filed June 14, 1971, Ser. No. 152,680
Int. Cl. H02k 9/00
U.S. Cl. 310—52 8 Claims

A connector for forming a fluid tight, electrically conductive joint between two juxtaposed, fluid-colled stator bar ends or between a bar end and a connection ring of a dynamoelectric machine which may be misaligned during stator assembly. The connector is comprised of two movable and rotatable fittings with a sleeve member therebetween which are so formed as to correct slight bar or connection ring misalignment. The sleeve member has an interior brazing surface at each end defined by a counterbored hole. In one embodiment,

the sleeve is bent so that the centerlines of the counterbored holes are noncoincident. In other embodiments, the sleeve is straight but the counterbored holes are formed so that the centerlines of one or both counterbored holes do not coincide with the centerline of the sleeve.



3,693,037

DYNAMO ELECTRIC MACHINES

John Godfrey Wilson West, Sutton Coldfield, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed April 29, 1971, Ser. No. 138,662
Int. Cl. H02k *21/76*
U.S. Cl. 310—154 9 Claims

A dynamo electric machine including at least a pair of pole pieces. Each pole piece is divided into two parts and yoke member are provided to connect one part of one pole piece with one part of the other pole piece. The yoke members are magnetically isolated from each other and the arrangement is such that the armature action flux which would tend to demagnetize one part of each pole piece is minimized.

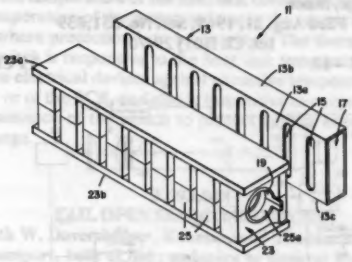
3,693,038

TRAVELING WAVE TUBE (TWT) OSCILLATION PREVENTION DEVICE

Allan W. Scott, and Yukio Hiramatsu, both of Los Altos, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 3, 1971, Ser. No. 139,332
Int. Cl. H01j *25/34*
U.S. Cl. 315—35 10 Claims

A traveling wave tube amplifier device which suppresses random oscillations through the entire length of the traveling wave tube. The solid side walls have a series of resonant slots which are structurally coupled to one another through the wall and lossy load along the entire length of the traveling wave tube. The slots are resonant at a frequency above the operating band of the tube, but below the lower edge of its stop band.



3,693,039

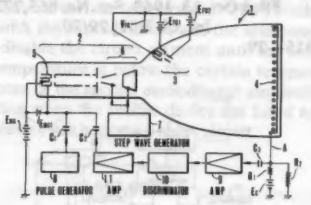
Patent Not Issued For This Number

3,693,040

METHOD OF READING BISTABLE STORAGE TUBES BY INCREASING LUMINESCENCE WHERE INFORMATION IS STORED

Hajime Takita, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,562
Int. Cl. G11c *7/00*; H01j *29/52*
U.S. Cl. 315—12 3 Claims



In a method of providing a stable bright direct view of information stored in a bistable storage tube the storage surface of the tube is swept with an electron beam of an intensity not sufficient to write for producing electrical signals corresponding to the information that has been stored in the storage surface, an electron beam from a read out electron gun of the storage tube is controlled with the electrical signals to supply a large current to the read out portions in the storage surface having information to cause them to luminesce brightly and above described cycle is repeated until the entire area of the storage surface is read out.

3,693,041

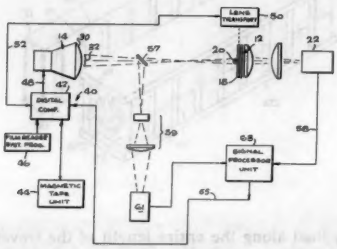
Patent Not Issued For This Number

3,693,042

RAPID FILM READER/RECORDER UTILIZING MOVABLE CYLINDRICAL LENS

Edward Fredkin, Natick, Mass., and Walter Renold, Los Angeles, Calif., assignors to Information International, Inc., Cambridge, Mass.

Filed Aug. 21, 1969, Ser. No. 851,839
Int. Cl. H01j 29/70
U.S. Cl. 315—18 19 Claims



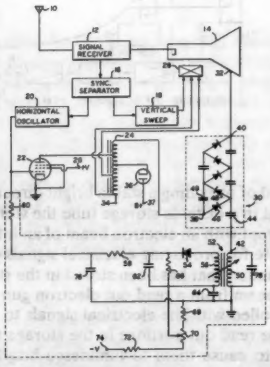
Apparatus for high speed reading and recording on film and the like comprising a cathode ray tube for generating a scanning spot which can move within a raster area on the tube face, and a pair of small perpendicular cylindrical lenses that focus an image of the raster area on a small region of a film frame where the lenses cross. Each of the cylindrical lenses can be moved, to shift the scanning spot to any region on the film frame, the scanning spot being movable within the raster area on the tube face to compensate for lag in lens movement. A transducer for indicating the position of each lens comprises a stationary pattern of illuminated lines which is focused by an end portion of that lens onto a stationary transparent plate with opaque stripes, and a photodetector behind the plate.

3,693,043

PULSE REGULATOR CONTROLLED FROM VOLTAGE MULTIPLIER

Werner Franz Wedam, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Oct. 13, 1969, Ser. No. 865,773
Int. Cl. H01j 29/70
U.S. Cl. 315—29 9 Claims



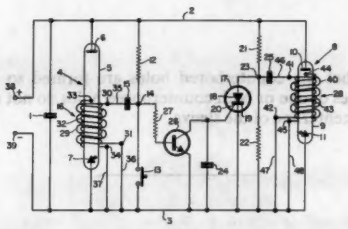
In a television receiver in which the high voltage power supply for the picture tube includes a voltage multiplier coupled between the retrace pulse output of the horizontal sweep circuit and the second anode of the picture tube, a circuit for automatically regulating the pulse output of said sweep circuit comprising a pulse transformer having a primary winding connected between the multiplier reference terminal and ground, and a rectifier and time delay filter coupled between the pulse transformer secondary winding and the grid bias circuit of the horizontal output amplifier. The pulse transformer develops voltage pulses from the multiplier which, when rectified, provide a control voltage which is a function of picture tube beam current. Application of this control voltage via the filter to the bias circuit is operative to provide the desired pulse regulation by controlling the grid bias of the horizontal output amplifier.

3,693,044

FIRING MEANS FOR DISCHARGE TUBES

Gareld I. Gilman, and Robert H. Wallace, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 24, 1970, Ser. No. 101,334
Int. Cl. H01j 17/34; H05b 41/30
U.S. Cl. 315—57 12 Claims



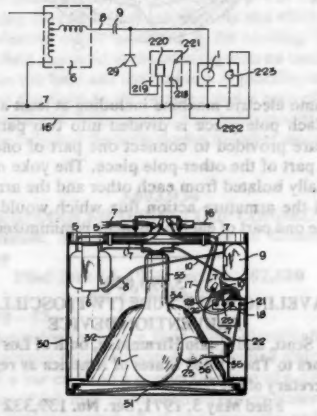
A triggering transformer having windings surrounding a photographic flash tube fires the latter when the transformer primary winding is energized by the closure of a switch. This switch closure also turns off a transistor which then unblocks a light sensitive integrator including an LASCR which receives the flash tube light by reflection. When the integrator has received a predetermined quantity of light, the LASCR turns on and energizes the primary winding of a second triggering transformer having windings surrounding a quench tube connected in parallel with the flash tube. This fires the quench tube which in turn extinguishes the flash tube.

3,693,045

ILLUMINATION

Lorenzo S. Price, Creve Coeur, Mo., assignor to The Edwin F. Guth Company, St. Louis, Mo.

Filed Feb. 13, 1970, Ser. No. 11,202
Int. Cl. H05b 39/10
U.S. Cl. 315—91 1 Claim



Illumination system utilizing H.I.D. (high intensity discharge) lamps, and having a subordinate lamp automatically activated to establish immediate illumination when the

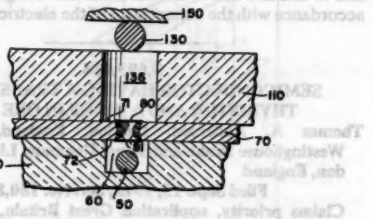
H.I.D. lamp circuit is turned on, i.e., without awaiting the usual warm-up period, and to maintain illumination during periods of voltage dip (which normally extinguishes H.I.D. lamps) in the circuit supplying them, as well as during subsequent recovery and restarting the H.I.D. lamps after extinguishment as a result of voltage dip or other outage condition.

3,693,046

CATHODES WITH TREATED APERTURES FOR INTERCONNECTING GAS CELLS OF A DISPLAY PANEL

David Glaser, Bound Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 26, 1970, Ser. No. 14,368
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV 4 Claims



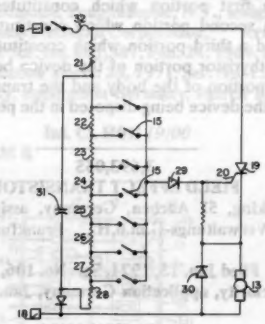
A display panel including a lower layer and an upper layer of gas-filled cells with cathodes in common between the layers and with separate anodes associated with each layer of cells, tiny apertures in the cathodes interconnecting upper and lower cells, having improved cathodes wherein the surfaces in the apertures of the cathodes are treated to increase their work function so that these surfaces do not support cathode glow in the operating conditions of the panel, thus preventing spurious transfer of cathode glow from the lower scanning to the upper visible layer of cells.

3,693,047

APPARATUS FOR PROTECTING ELECTRICAL DEVICES

David C. Hamstra, Clinton, Iowa, assignor to General Electric Company

Filed Sept. 28, 1971, Ser. No. 184,564
Int. Cl. H02h 5/04
U.S. Cl. 317—13 B 8 Claims



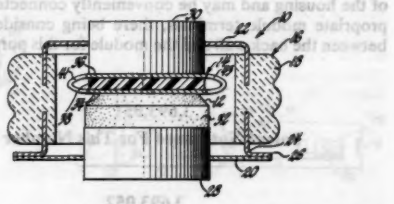
Apparatus for protecting electrical devices, particularly permanent magnet motors and components for controlling the speed of such motors, such as solid state elements, against excessive current and excessive temperature. A permanent magnet motor utilized for driving an electric appliance, such as a blender, is controlled by a circuit which includes a silicon-controlled rectifier in series with the motor. The SCR is mounted in heat transfer relationship with one side of a heat sink composed of a material having good heat conductivity. A thermally-actuated switch, connected in series circuit with the motor and the SCR, is positioned in heat transfer relationship with the opposite side of the heat sink. The heat sink is constructed so that its thermal mass may be easily modified to make the temperature of the heat sink correspond generally to the temperature of the motor, at least in the range of temperatures where protection is to be provided. The thermally-actuated switch is responsive to the heat sink temperature to protect the electrical devices against excessive temperature of the motor or of the SCR, and also is responsive to current through the resistance of the switch to protect against excessive current surge.

3,693,048

FAIL OPEN SEMICONDUCTORS

Kenneth W. Doversberger, Kokomo, and Thomas J. Furnival, Logansport, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,889
Int. Cl. H02h 5/04
U.S. Cl. 317—33 R 1 Claim



A circuit element which includes a fusible device and a semiconductor device series-connected in an integral casing. When a power supply passes a current larger than a predetermined value through the fusible device, fusion takes place in the fusible device so as to prevent the current from changing the semiconductor device into a short circuit across the power supply.

In a second embodiment the circuit element also includes a switch that is opened in response to heating of the semiconductor device above a certain temperature. The switch is series-connected with the fusible device and the semiconductor device so as to disable the circuit element until the semiconductor device temperature is below the certain temperature. The circuit element of the second embodiment also includes a lamp for indicating when the fusible device has fused and the semiconductor device has become a short circuit.

3,693,049

Patent Not Issued For This Number

3,693,050

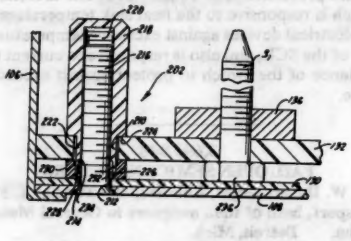
SINGLE MODULE POWER SUPPLY

James P. Ettinger, and Christian S. Otteson, both of Ridgefield, Conn., assignors to Electric Regulator Corporation, Norwalk, Conn.

Filed Jan. 21, 1971, Ser. No. 108,309
Int. Cl. H02b 1/02
U.S. Cl. 317—99 8 Claims

A power supply unit for converting an alternating current input to a controlled direct current output, comprises a rectifier module having a plurality of rectifiers serially arranged in substantial alignment with appropriate electrically conductive spacers therebetween. Heat dissipating fins or plates are interleaved between the rectifiers and spacers and serve as electrically and thermally conductive means. A pair of electrically conductive jumper plates are provided operatively connecting selected terminals of said rectifiers to complete the operative circuit. The module is slidably mounted in a housing having a

relatively massive bus bar network secured on an insulating member disposed on the back wall of said housing by novel fastening means. Said fastening means includes a screw extending from the back wall of the housing through apertures in said insulating member and an insulative nut member adapted



to engage said screw and to seal said aperture to prevent any arcing or leakage from the bus bar network to the housing. The external leads extend through an aperture in the back wall of the housing and may be conveniently connected to the appropriate module terminals, there being considerable space between the back wall and the module for this purpose.

3,693,051

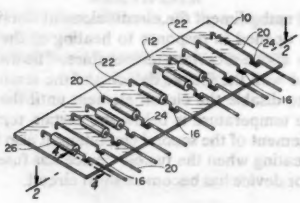
Patent Not Issued For This Number

3,693,052

ELECTRICAL COMPONENT MOUNTING

Frank Galanti, Reseda, Calif., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed April 15, 1971, Ser. No. 134,168
Int. Cl. H05k *1/18*
U.S. Cl. 317—101 CC 1 Claim



The connection of an electrical component to a printed circuit board wherein a lead to the component includes an offset being in frictional engagement with the walls of an opening within the circuit board, the apex of the offset being soldered to be able to electrically connect the lead to the printed circuit path on the underside of the board, the free end of the lead extending exteriorly of the board on the upper surface thereof.

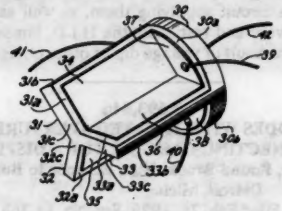
3,693,053

METAL OXIDE VARISTOR POLYPHASE TRANSIENT VOLTAGE SUPPRESSION

Thomas E. Anderson, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 29, 1971, Ser. No. 193,963
Int. Cl. H01c *7/12*; H02h *3/26*
U.S. Cl. 317—231 27 Claims

A body of sintered metal oxide material exhibiting highly nonlinear resistance characteristics includes a base and plurality of members projecting therefrom. Electrodes in the form of electrically conductive material are plated on some or all of the major surfaces of the projecting members and base. The electrodes provide connections to electrical conductors connected to the power input or output terminals of a single or polyphase electrical apparatus and the nonlinear resistance



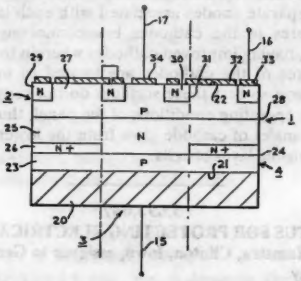
characteristics of the metal oxide material provides desired line-to-line and line-to-neutral transient voltage suppression in accordance with the connections of the electrical conductors.

3,693,054

SEMICONDUCTOR HAVING A TRANSISTOR, A THYRISTOR AND A DIODE IN ONE BODY

Thomas A. Anderson, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed Sept. 15, 1971, Ser. No. 180,821
Claims priority, application Great Britain, Oct. 6, 1970, 47,430/70
Int. Cl. H01l *9/12*
U.S. Cl. 317—235 5 Claims



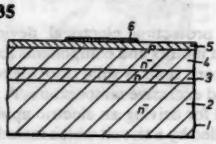
This disclosure is directed to a semiconductor device contained within an integral body of semiconductor material consisting of a first portion which constitutes effectively, a transistor, a second portion which constitutes effectively a thyristor and a third portion which constitutes effectively a diode. The thyristor portion of the device being disposed in the central portion of the body and the transistor and diode portions of the device being disposed in the peripheral portion of the body.

3,693,055

FIELD EFFECT TRANSISTOR

Heinz Beneking, 51 Aachen, Germany, assignor to Licenta Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Jan. 13, 1971, Ser. No. 106,199
Claims priority, application Germany, Jan. 15, 1970, P 20 01 584.3
Int. Cl. H01l *13/04*
U.S. Cl. 317—235 6 Claims



A field effect transistor comprises a semiconductor body having a channel region of a first type of conductivity, a con-

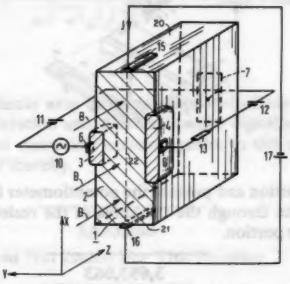
trol region of a second type of conductivity situated between two main electrodes with which the channel region is provided and an intermediate region of the first type of conductivity situated between the channel and control regions and being less doped than the channel region.

3,693,056

METHOD FOR AMPLIFICATION OF HIGH-FREQUENCY ELECTRICAL SIGNALS IN A TRANSISTOR

Fritz Paschke, Kahlenbergerstrasse 35, 1190 Vienna, Austria, assignor Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 29, 1971, Ser. No. 110,924
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 R 14 Claims



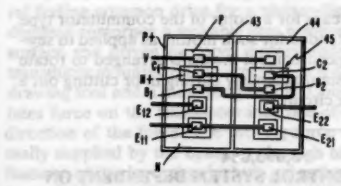
A method for the amplification of high-frequency electrical signals in a transistor having a base region, an emitter region and a collector region with the collector and emitter regions secured to the opposite surfaces of the base region, comprises applying an electrical field to the base region in a direction normal to a mid-line formed between the emitter and collector, the base region including charge carriers and charge carrier pairs; producing an impact ionization condition in the base region under the condition that the lifetime of the charge carrier in the base is greater than the ionization time; and applying a magnetic field to tee base region in a direction normal to the applied electric field and normal to the mid-line between the emitter and collector, said magnetic field urging the charge carrier pairs of the base region toward the collector.

3,693,057

MONOLITHIC CIRCUITS WITH PINCH RESISTORS

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 801,387, Feb. 24, 1969, abandoned. This application March 24, 1971, Ser. No. 127,751
Claims priority, application Germany, March 1, 1968, P 15 74 651.7
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 4 Claims



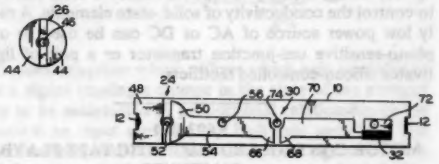
A monolithic power switching flip flop circuit comprising a pair of cross-coupled transistors, each having a "pinch" resistor formed in one common substrate. Each pinch resistor comprises a resistor and a diode connected to each other at one terminal, the second terminal of the resistor being connected to the base of a respective transistor and the other terminal of the diode being connected to the collector of said transistor through the bulk semiconductor material of the common substrate. By suitable external electrical connections, the resistor portion of each pinch resistor is connected in parallel with the diode portion of the other pinch resistor. Thus, each resistor is shunted by a diode and placed in the collector circuit of a respective transistor to form the electrical circuit equivalent of a conventional power switching flip flop utilizing minimum bulk semiconductor material.

3,693,058

VARIABLE CAPACITOR INCLUDING A ROTATABLE DIELECTRIC DISC

Darrel I. Wilhoit, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 830,071, June 6, 1969, Pat. No. 3,622,919. This application Jan. 25, 1971, Ser. No. 109,334
Int. Cl. H01g *5/06*; H03h *7/24*
U.S. Cl. 317—249 R 5 Claims



A variable capacitor forming part of an attenuator section includes a rotatable ceramic disc having a metalized configuration on its upper side which may be mutually juxtaposed with respect to a pair of metalized portions on a ceramic substrate therebelow. The metalized ceramic disc is superimposed by a rotatable plastic body engageable for rotating the disc and having an extension depending through an aperture in the substrate to provide an axis portion for the combined rotatable member. A spring is interposed between a grounded metal cover and a portion of the plastic body, urging the ceramic disc toward the substrate.

3,693,059

CAPACITIVE COUPLING SWITCH AND ACTUATOR

Richard H. Harris, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1971, Ser. No. 154,112
Int. Cl. H01g *5/01*
U.S. Cl. 317—249 R 3 Claims

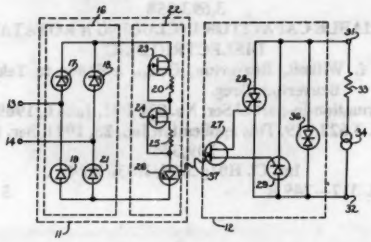
A variable capacitance switch element is disclosed in which varying capacitance is effected by increasing the active surface area of a capacitive coupling member in proximity to a second capacitive plate. The structure of the variable capacitive element is such that the capacitance of the device varies in nearly linear fashion with the depression of an actuator member.

3,693,060

SOLID-STATE RELAY USING LIGHT-EMITTING DIODES

Michael F. Joyce, Chicago, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed April 13, 1971, Ser. No. 133,516
Int. Cl. H01l 15/06
U.S. Cl. 317—262 R 1 Claim



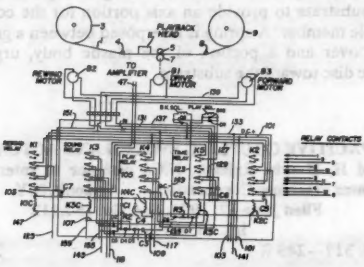
A solid-state relay utilizing a light-emitting diode to transmit optical energy steadily to a photo-sensitive solid-state device to control the conductivity of solid -state elements. A relatively low power source of AC or DC can be used to operate photo-sensitive uni-junction transistor or a pair of light-activated silicon-controlled rectifiers.

3,693,061

MOTOR CONTROLLED MAGNETIC TAPE PLAYBACK MACHINES

Wilhelm Manfred Kahle, Lucerne, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Secretary of State

Filed Dec. 16, 1970, Ser. No. 98,836
Claims priority, application Canada, Dec. 17, 1969, 070,136
Int. Cl. H02p 7/00
U.S. Cl. 318—7 1 Claim



The application discloses an improved three-motor tape playback machine intended primarily for the teaching of languages. The machine is provided with relays which act to render the amplifier circuits of the machine inoperative when the operating push buttons are operated, so reducing at least to a very low level switching and other noises from the sound output. The arrangement also reduces mechanical noise from the machine.

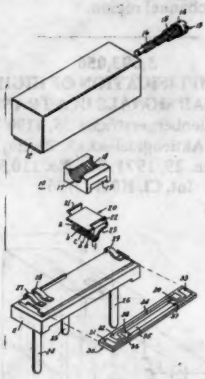
3,693,062

TRIMMER POTENTIOMETER WITH RESISTIVE OVERLAY

George Von Vick, Atlanta, Ga., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 18, 1971, Ser. No. 107,168
Int. Cl. H01c 9/02
U.S. Cl. 338—92 4 Claims

A trimmer potentiometer includes an elongate resistive element which is screened over a portion of each end terminal pad. Each end terminal pad extends laterally from the overlay and wiper means is disposed for engagement with the lateral extensions of the end terminal pads to short out the resistive overlay portion and prevent the potentiometer from exhibiting a resistance through the thickness of the resistive element at an overlay portion.

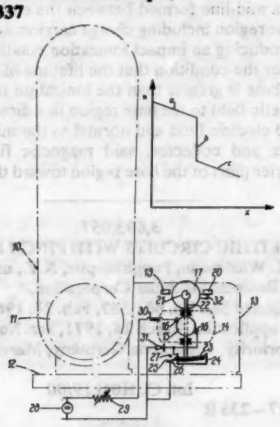


3,693,063

SPEED CONTROL DEVICE FOR SEWING MACHINES

Pietro Siliano, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed April 6, 1971, Ser. No. 131,606
Claims priority, application Italy, Apr. 23, 1970, 42906-A/70
Int. Cl. H02p 5/44
U.S. Cl. 318—337 1 Claim



A speed control means for a motor of the commutator type and is particularly intended for such motors as applied to sewing machines. The speed control means is arranged to rotate the brush axis while simultaneously cutting in or cutting out a diode from the motor circuit.

3,693,064

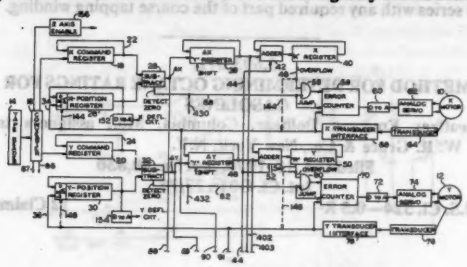
NUMERICAL CONTROL SYSTEM DEPENDENT ON VECTOR MAGNITUDE

William B. Kiwiet, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 66,979, Aug. 26, 1970. This application March 5, 1971, Ser. No. 121,316
Int. Cl. G05b 19/24
U.S. Cl. 318—571 15 Claims

A numerical control system for operating a machine tool or the like receives successive coordinate movement instructions

for controlling a device such as a cutting tool. The system employs a digital differential analyzer in each coordinate axis for generating a servo rate command, while providing linear interpolation for each movement. Feedrate is digitally controlled in



different coordinate axes to bring about an optimized vector feedrate. Acceleration and deceleration are digitally directed for adapting the numerical control system to the particular device operated thereby.

3,693,065

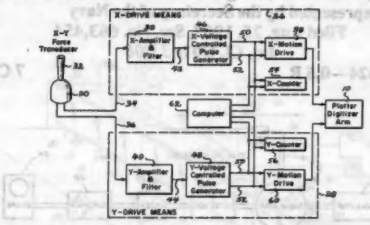
Patent Not Issued For This Number

3,693,066

NATURAL FEELING COMMON DRIVE PLOTTER-DIGITIZER

David Friedman, and Kenneth Levy, both of Framingham, Mass., assignors to Computervision Corporation, Burlington, Mass.

Filed Aug. 24, 1970, Ser. No. 66,343
Int. Cl. G05b *11/36*, *11/01*
U.S. Cl. 318—576 **17 Claims**



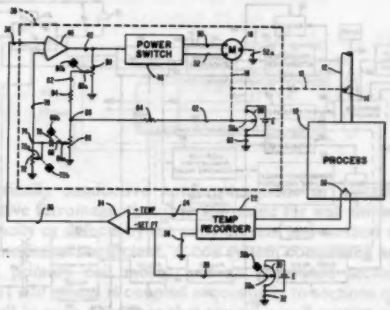
A power assisted positioning device which provides a natural feeling common drive for a plotter-digitizer. The plotter-digitizer comprises a movable arm positioned over a drawing surface and driven by servo motors under the control of a transducer mounted on the arm. The arm holds an engageable drawing tool and a measuring reticle. Control circuitry translates force on the transducer into rate-of-arm motion in the direction of the force. The moving force for the arm is normally supplied by the operator through his hand. Additional features of this invention include a deadband around the zero force point and a high mechanical resonant frequency characteristic in the transducer. These characteristics result in a "-natural feel" to the hand controlled arm and provide high stability to the system. Motion of the arm can be in tiny steps of accurately known size and a record of the steps can be stored to indicate the direction and amount of arm travel. Likewise, on command from a control such as a computer, the arm can be moved a selected number of steps representative of a desired travel, using some of the same control circuitry.

3,693,067

ADJUSTABLE PROPORTIONAL RESPONSE FOR BALANCEABLE SYSTEM

Thomas J. Walsh, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Continuation of Ser. No. 758,457, Sept. 9, 1968, abandoned. This application Aug. 7, 1970, Ser. No. 62,064
Int. Cl. G05b *11/36*
U.S. Cl. 318—609 **3 Claims**



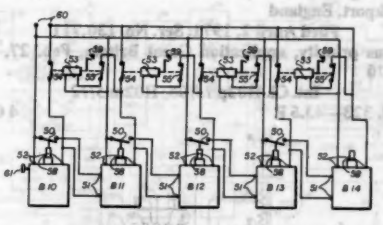
A balanceable system which utilizes a high gain amplifier to provide a signal causing a change in the state of the element which is to be maintained in proportional relationship to the magnitude o an input signal to the high gain amplifier. The amplifier also responds to a system feedback signal which is derived from a variable potentiometer across which is impressed the sum of a feedback signal representing the state of the element and a feedback signal which is an adjustable portion of the output signal of the amplifier. The adjustment of the variable potentiometer provides an adjustment of the proportional relationship between the input signal and the state of the element while the variable portion of the amplifier output signal provides for an adjustment of the effective gain of the system.

3,693,068

ELECTRICAL POWER SUPPLY COMPRISING SEQUENTIALLY ACTIVATED BATTERIES

John C. Bogue, 101 Ocean Avenue, and Robert I. Sarbacher, 708 4th St., both of Santa Monica, Calif., assignors to said Bogue, by said Sarbacher

Filed July 8, 1970, Ser. No. 53,097
Int. Cl. H01m *45/00*
U.S. Cl. 320—13 **13 Claims**

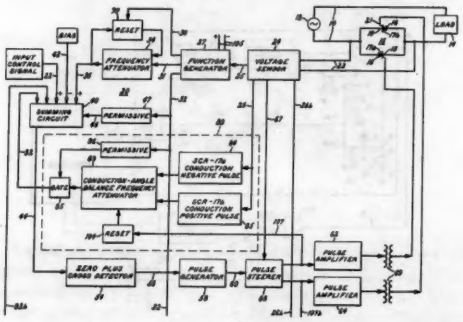


An electrical power supply, particularly adapted for intermittent use, has an extremely long standby life. A series of squib actuated electrochemical batteries are controlled by a selective activation circuit, so that each reserve or secondary battery of the series is activated only after the preceding battery has substantially spent its useful life. The circuit responds to an increase in pressure within the battery encapsulation signaling the end of the battery's useable lift, to substitute the next battery in the series, and to activated it by firing its squib.

3,693,069
GATING CONTROL FOR A STATIC SWITCHING ARRANGEMENT WITH IMPROVED CONDUCTION ANGLE BALANCING MEANS

Fred W. Kelley, Jr., Media, Pa., and Georges R. E. Lezan, Cherry Hill, N.J., assignors to General Electric Company

Filed Nov. 9, 1971, Ser. No. 196,885
Int. Cl. G05f 1/44
U.S. Cl. 323—24 6 Claims

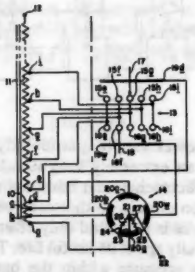


A gating control for a switching arrangement comprising a pair of thyristors which are alternately gated into conduction by gating pulses for predetermined conduction angles. First balancing means compares the conduction angles of alternate thyristors on those pairs of successive conducting periods during which a first one of the thyristors conducts preceding a second one of the thyristors and derives a first-balance indicating signal indicative of the difference between the conduction angles compared by the first balancing means. Second balancing means compares the conduction angles of alternate thyristors on those pairs of successive conducting periods during which the second thyristor conducts preceding said first thyristor and derives a second balance-indicating signal indicative of the difference between the conduction angles compared by this second balancing means. For forcing the conduction angles of the alternate thyristors toward equality, means sensitive to the first balance-indicating signal varies the gating angles at which gating pulses are delivered to the first thyristor; and means sensitive to the second balance-indicating signal varies the gating angles at which gating pulses are delivered to the second thyristor.

3,693,070
TAP CHANGING APPARATUS FOR TRANSFORMERS

John Douglas Shorrock, 49 Cavendish Road, Heaton Mersey, Stockport, England

Filed April 2, 1971, Ser. No. 130,711
Claims priority, application Great Britain, Feb. 27, 1970, 9,494/70
Int. Cl. H02p 13/06; H02m 5/12
U.S. Cl. 323—43.5 R 4 Claims

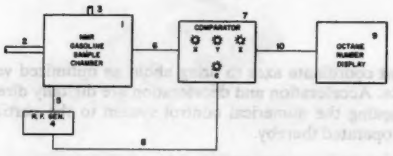


Tap changing apparatus for a transformer includes an off-load tapping selector switch having its contacts connected to tappings on a coarse tapping winding, and a rotary diverter switch connected to the tapping selector switch and to tappings on a fine tapping winding. The arrangement enables any required part of the fine tapping winding to be connected in series with any required part of the coarse tapping winding.

3,693,071
METHOD FOR DETERMINING OCTANE RATINGS FOR GASOLINES

Geoffrey Emerson Dolbear, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,830
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 12 Claims

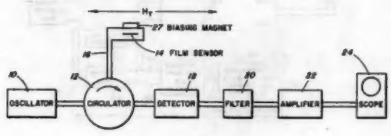


The octane number of a gasoline can be accurately determined using nuclear magnetic resonance analysis. The The octane numbers, research octane number and motor octane number, can be determined by a linear correlation of allylic or olefinic and aromatic hydrogen concentrations. The gasoline which is to be analyzed is usually flowed through an NMR cell containing a magnet, R.F. source and antenna, with an output indicating the quantitative presence of the differing types of hydrogens. By the linear correlation of the degree of presence of the specific hydrogens, the octane numbers are determined. These octane rating devices can be used to control plant streams where varying grades of gasoline are formulated.

3,693,072
FERROMAGNETIC RESONANCE MAGNETOMETER

Henry R. Irons, Adelphi, and Leonard J. Schwee, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 25, 1967, Ser. No. 663,454
Int. Cl. G01r 33/08
U.S. Cl. 324—0.5 R 7 Claims



A magnetometer having a thin-film sensor positioned near or at the end of a transmission line and biased near its ferromagnetic resonance. An electromagnetic signal is applied to the thin-film sensor. The reflected portion of this signal is amplitude modulated by the influence of an external magnetic field on the thin-film sensor, and then detected to provide a measure of the external magnetic field.

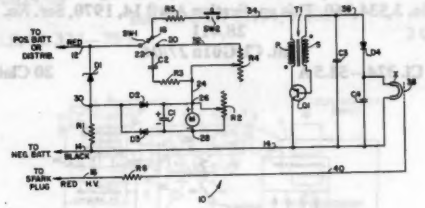
3,693,073
MULTIPLE FUNCTION TESTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Michael Colette, Saint Clair Shores, Mich., assignor to Orbit Laboratories, Inc., Chicago, Ill.

Filed Oct. 23, 1970, Ser. No. 83,357
Int. Cl. F02p 17/00
U.S. Cl. 324—16 R 10 Claims

A multiple function device has three circuits with a common control. One circuit is an oscillator which charges a con-

denser that is discharged through a gaseous discharge lamp by the sparking of a spark plug to give a stroboscopic timing light; one circuit is an ohmmeter which averages the values of voltage for dwell time and open circuit time to give percentage of



cam dwell; and another circuit is an averaging meter which provides a voltage that is proportional to the number of times that the breaker points open. In the latter two instances the meter is calibrated with scales that read dwell time and R.P.M., directly.

3,693,074

MAGNETIC DETECTION OF SURFACE FAULTS IN AN ELONGATED METAL BODY BY PASSING ELECTRIC-CURRENT PULSES THERETHROUGH WHILE A MAGNETIC TAPE IS DISPLACED ALONG THE SURFACE OF THE BODY

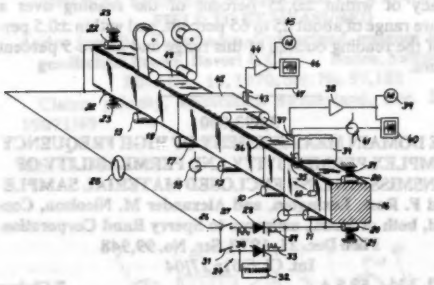
Paul Holler, Oberhauser, and Paul Scholten, Essen-Frintrop, both of Germany, assignors to Huttenwerk Oberhausen A.G., Oberhausen, Germany

Continuation-in-part of Ser. No. 775,665, Nov. 14, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,328

Claims priority, application Germany, Nov. 15, 1967, P 16 48 517.9

Int. Cl. G01r 33/12

U.S. Cl. 324—37 7 Claims



A method of detecting the location and extent of superficial faults, especially cracks, and for measuring the depths of such cracks in bars, billets, blooms, ingots, rods and tubes, especially of noncircular cross section. An electric current is passed axially through the elongated metallic body, and the magnetic flux of field (crossflux) generated by the passage of the electric current through the body is detected along the surface thereof. To avoid or reduce the effects of the edges of the noncircular body upon the detected magnetic field strength or flux and, therefore, to reduce the possibility that cracks in the region of these edges will be undetected or poorly evaluated, the electric current passed axially through the bar is pulsed with the pulse shape being selected such that, in relation to the geometry of the bar, cracks in the surface in the region of the edges are detected.

3,693,075

EDDY CURRENT SYSTEM FOR TESTING TUBES FOR DEFECTS, ECCENTRICITY, AND WALL THICKNESS

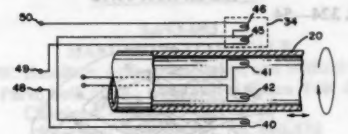
Friedrich M. O. Forster, Grathwohlstrasse 4, Reutlingen, Germany

Filed Oct. 16, 1970, Ser. No. 81,320

Claims priority, application Germany, Nov. 15, 1969, P 19 57 489.1

Int. Cl. G01r 33/12

U.S. Cl. 324—40 6 Claims



Electrically conductive nonferromagnetic or electrically conductive ferromagnetic tubes are tested for wall thickness, eccentricity or defects by the eddy current test method using the transmission coefficient. A coil system comprising an a-c excited primary coil means and an associated secondary (pickup) coil means is coupled sequentially to sections of the tube wall in such a manner that the tube wall section under test is disposed between the primary and the secondary coil means. In one embodiment the primary coil produces a magnetic field whose lines of force are perpendicular to the tube axis, in another embodiment the primary flux is directed axially to the tube. The flux transmitted through the tube wall is modified by the eddy current generated in the tube wall and the secondary coil means is inductively coupled to the flux emerging from the tube wall. Responsive to relative motion between the tube and coil systems an electrical signal appears at the secondary coil means which is evaluated by electrical circuit means for the physical characteristics of the tube. Various coil arrangements are disclosed to derive the stated parameters.

3,693,076

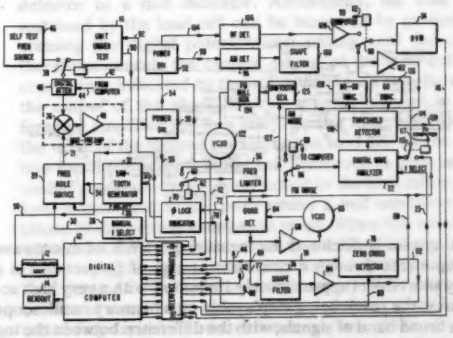
COMPUTER CONTROLLED RF NOISE AND MODULATION ANALYZER

John L. Nugent, Baltimore, and Harvey M. Masters, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 22, 1971, Ser. No. 155,556

Int. Cl. G01r 27/00

U.S. Cl. 324—57 N 13 Claims



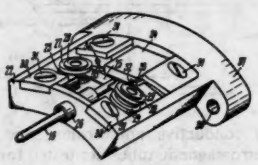
A computer controlled test set capable of measuring FM and AM noise of an RF signal as well as the index of modulation, RF power level and the linearity of a ramped FM signal output from a microwave signal oscillator included in a unit under test.

3,693,077

ELECTRIC DRILL

Nikolai Nikolaevich Grinchenko, ulitsa Tonkopia, 24a, kv. 26; Vadim Vyacheslavovich Abakanovich, ulitsa Lermontovskaya, 37, kv. 38; Jury Moiseevich Goldshtein, ulitsa Olminskogo, 17, kv. 1; Grigory Zakharovich Gurevich, ulitsa Karelskaya, 14, kv. 39; Viktor Gavrilovich Chepelev, Moskovsky prospekt, 232a, kv. 10, all of Kharkov, and Vladimir Zakharovich Kuvshinov, ulitsa Gastello, 8, kv. 33, Moscow, all of U.S.S.R.

Filed June 4, 1971, Ser. No. 150,121
Int. Cl. G01r 31/12
U.S. Cl. 324—54 2 Claims



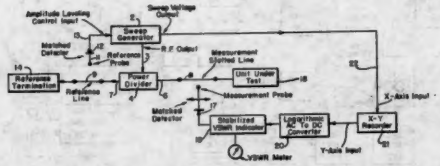
An electrical drill for drilling oil and gas wells is disclosed. The electrical drill comprises a housing which accommodates a three-winding-phase electric motor with a cable lead-in powered through a supply line consisting of a two-wire cable line connected through said lead-in to said motor and a drill pipe string as the third wire of said supply. A device for testing insulation resistance of the circuit between the cable line and the motor winding is connected between one of the winding phases and said housing and mounted in the inner circular space thereof. The device for testing insulation resistance comprises a thyristor and a diode mounted in one frame having the form of a circular section for dissipating heat from said thyristor and diode and, simultaneously, providing electrical connection to said housing. This arrangement increases the rigidity of the lower end of the drill pipe string, increases the reliability of the entire installation and improves the dependability of the telemetering data obtained in the course of well boring.

3,693,078

SWEPT FREQUENCY VSWR MEASUREMENT WITH SLOTTED LINE

Gunther U. Sorger, Bethesda, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Feb. 15, 1967, Ser. No. 616,283
Int. Cl. G01r 27/04
U.S. Cl. 324—58 B 9 Claims



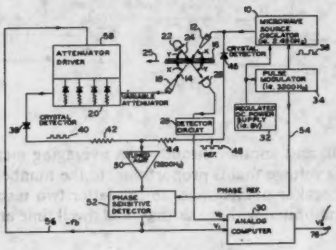
A system is disclosed for measuring VSWR of microwave components through a continuous range of frequencies in a very short time (approximately 1 minute), with a very high accuracy, the result being displayable on a memory oscilloscope as a broad band of signals, with the difference between the top and bottom of the band, at any frequency, giving an indication of the VSWR. A slotted line probe is moved one-half wavelength of the lowest frequency being measured, and the output of a reference probe is used to provide a feedback signal to balance out the rising frequency characteristics which would otherwise exist.

3,693,079

APPARATUS FOR MEASURING PERCENT MOISTURE CONTENT OF PARTICULATE MATERIAL USING MICROWAVES AND PENETRATING RADIATION

Charles W. E. Walker, 855 McBride Blvd. Apt. 307, New Westminster, British Columbia, Canada

Continuation-in-part of Ser. No. 633,940, Aug. 26, 1967, Pat. No. 3,534,260. This application April 14, 1970, Ser. No. 28,411
Int. Cl. G01n 27/04
U.S. Cl. 324—58.5 A 20 Claims



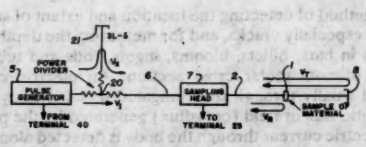
Apparatus for measuring the percent moisture content of particulate materials, such as wood chips and grain, is described in which a beam of microwaves and a beam of penetrating radiation, such as gamma rays, X-rays, beta rays or high-velocity electrons, are transmitted through the same portion of a layer of such material. The beam of microwaves is directed at an acute angle to the particulate layer so that any microwave reflections do not strike the transmitting antenna and produce standing wave patterns. The microwaves are of a frequency that the microwave beam is partially absorbed by the water in the moist particulate material to produce a moisture signal, but has a wavelength greater than the dimensions of the particles to prevent diffraction effects. The beam of penetrating radiation is also partially absorbed by the total mass of the moist particulate material to produce a density signal. The moisture and density signals are then fed to an analog computer to determine the percent of moisture with an accuracy of within ±0.25 percent of the reading over a moisture range of about 25 to 65 percent, and within ±0.5 percent of the reading outside of this range and above 5 percent moisture.

3,693,080

TIME DOMAIN MEASUREMENT OF HIGH FREQUENCY COMPLEX PERMITTIVITY AND PERMEABILITY OF TRANSMISSION LINE ENCLOSED MATERIAL SAMPLE

Gerald F. Ross, Lexington, and Alexander M. Nicolson, Concord, both of Mass., assignors to Sperry Rand Corporation

Filed Dec. 21, 1970, Ser. No. 99,948
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A 7 Claims



The forward and back scattered energy of a sample exposed to an incident impulse of electromagnetic energy in a transmission line is sampled by a drift compensated sampling system and the incident wave and reflected and transmitted responses are employed in performing discrete Fourier transformations in a computation process yielding complex permittivity and complex permeability of the material of the sample.

3,693,081

FREQUENCY RELAY

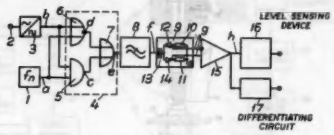
Stig Avlander, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 23, 1970, Ser. No. 57,644

Claims priority, application Sweden, July 29, 1969, 10629/69

Int. Cl. G01r 23/14, 23/02

U.S. Cl. 324—79 R 3 Claims



A frequency relay for determining the deviation of a supervised frequency from a normal frequency has means for generating a signal with the supervised frequency and a second signal with a normal frequency and means for transferring said two signals into square voltages with high amplitude during one half period and low amplitude during the other half period. A logic circuit has two inputs to which said two signals are supplied and an output on which a third signal appears which has a certain amplitude when the two input signals are the same and another amplitude if the two input signals are different. A differentiating circuit has its input connected to the output of the logic circuit over a low-pass filter, the output signal of the differentiating circuit being a gauge of the deviation of the supervised frequency from the normal frequency.

3,693,082

APPARATUS FOR ELECTRONICALLY MEASURING THE ANGLE OF ROTATION OF THE POLARIZATION PLANE OF A LINEARLY POLARIZED LIGHT BEAM PRODUCED BY PASSAGE OF THE BEAM THROUGH A MAGNETO-OPTICAL ELEMENT SUBJECTED TO A MAGNETIC FIELD TO BE MEASURED

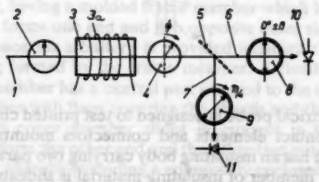
Andre Jaecklin, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 11, 1970, Ser. No. 97,181

Claims priority, application Switzerland, Dec. 23, 1969, 19071/69

Int. Cl. G01r 19/00

U.S. Cl. 324—96 5 Claims



An arrangement for measuring the current flow through a conductor includes a magneto-optical element provided with a coil through which the current to be measured is passed. A beam of linearly polarized light passed through the magneto-optical element has its plane of polarization rotated by an amount proportional to the magnetic field produced by the coil, and the light beam after issuing from the magneto-optical element is split by an optical divider into two partial beams having different directions. One of the partial beams is passed through a polarizing filter to a photo-detector and the other beam is also passed through a polarizing filter but which has a pass-through direction rotated by an angle of about 45° relative to that of the other polarizing filter. The respective electrical outputs from the photo-detectors are then fed to multipliers to which sinusoidal signals from a local oscillator are also fed, the outputs from the multipliers are then added and the output from the adding member is then applied to a frequency demodulator.

3,693,083

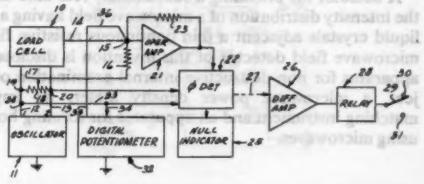
MANUAL DIGITAL SCALE

Martin W. Hamilton, Arlington Heights, and William H. Jones, Villa Park, both of Ill., assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Sept. 9, 1969, Ser. No. 856,436

Int. Cl. G01r 17/02, 27/02

U.S. Cl. 324—98 5 Claims



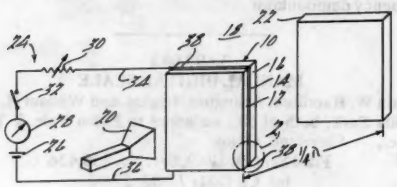
A manual digital scale system having a load cell for sensing the instantaneous mechanical load applied to a system and circuit means for coupling the load cell signal to a current summation point. A digital potentiometer arrangement is provided to produce current in digital steps, and means are provided to couple that current to the current summation point. An oscillator which may operate in the order of 2,500 Hz supplies power to the load cell at first and second phases. The output of the load cell is at a first phase, and the oscillator supplies power to the digital potentiometer at the second phase. The first and second phases are substantially 180° apart, and therefore current supplied by the digital potentiometer to the current summation point will subtract from current supplied thereto by the load cell. The output of the current summation point is coupled through an operational amplifier and a phase detector to a null indicator. Accordingly, the load being sustained by the load cell can be measured by gradually increasing the digital potentiometer setting until the current therefrom cancels the current output of the load cell. This condition is indicated by the null indicator. In the alternative, the output of the phase detector may be coupled to a differential amplifier and to a relay. By this latter arrangement, the value of the desired loading on the load cell can be preset into the digital potentiometer and loads such as grain or other similar goods can be gradually added to the load cell until the load is increased to the point where a null condition is obtained at the current summation point. When this occurs, the differential amplifier will reverse its position and operate the relay to trigger a signal indicating that the desired weight has been obtained. The digital potentiometer employed consists of a series of equal value resistors with a plurality of switch contacts being capable of connection to any one of the series connected resistors. Each one of the contacts has a scaling resistor connected in series therewith, and all of the contacts are connected in parallel to provide a common output. Each of the scaling resistors in sequence are one-tenth of the magnitude of the adjacent scaling resistor thereby providing an output which is digital in form.

3,693,084

METHOD AND APPARATUS FOR DETECTING MICROWAVE FIELDS

Carl F. Augustine, Farmington, Mich., assignor to The Bendix Corporation

Filed June 17, 1969, Ser. No. 833,958
Int. Cl. G01r 5/26, 21/04
U.S. Cl. 324—106 14 Claims



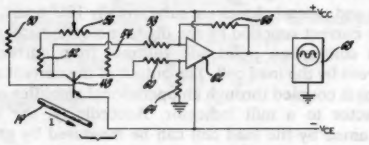
A detector for providing a substantially real time display of the intensity distribution of a microwave field having a layer of liquid crystals adjacent a thin continuous resistive film. The microwave field detector of this invention is disclosed in an apparatus for non-destructive internal examination of an object, a microwave power density meter, an impedance matching instrument and an apparatus for forming holograms using microwaves.

3,693,085

SYSTEM FOR CALIBRATED HIGH LEVEL CURRENT MEASUREMENT USING A MAGNETIC FIELD RESPONSIVE TRANSISTOR

Jack H. Beard, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 15, 1971, Ser. No. 162,826
Int. Cl. G01r 33/00, 33/02
U.S. Cl. 324—117 H 2 Claims



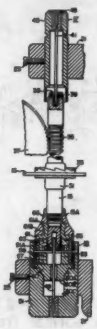
A transistor having terminal characteristics dependent on the magnetic field incident on the transistor is used in a current sensing arrangement to measure the level of current in a conductor. A differential output voltage is provided by the transistor proportionate to the magnetic field created by the current in the conductor. Calibration of the current sensor is effected by intensifying or shunting the magnetic field to permit measurement of low and high current levels respectively. The field incident on the transistor is intensified by use of magnetic material to direct the magnetic flux on the transistor to sense low current levels. High current levels are sensed by shunting the magnetic field in a calibrated fashion such that the field impinging on the transistor is maintained within the operational limits of the device; magnetic material is interposed between the transistor and the conductor to afford the requisite shunt path.

3,693,086

METER WITH SMALL TILT ERROR

Henry W. Redecker, Rt. 6, and Eugene G. Bezgela, 351 Forsyth St., both of Raleigh, N.C.

Continuation of Ser. No. 746,641, July 22, 1968, abandoned.
Filed March 15, 1971, Ser. No. 124,425
Int. Cl. G01r 1/00
U.S. Cl. 324—155 5 Claims



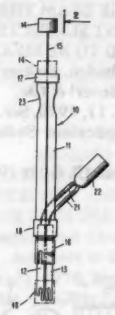
An induction type meter has a rotor mounted for rotation about a vertical axis and supported vertically by a magnetic mounting. The rotor is restrained against lateral motion by ring bearings made of an aromatic polyimide resin and a filler.

3,693,087

DUAL ACTING PROBE WITH EXTRACTOR/GUIDE

Joseph E. Adams, Millbrook; Edmund J. Di Stefano, and Arthur E. Enderley, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,204
Int. Cl. G01r 1/06; H01r 13/62
U.S. Cl. 324—158 P 3 Claims

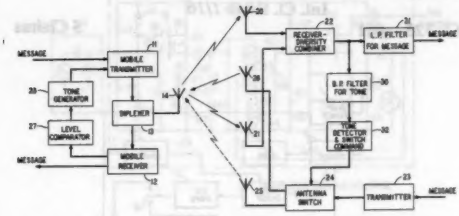


An electrical probe is designed to test printed circuit boards having contact elements and connectors mounted thereon. The probe has an insulating body carrying two parallel contact blades. A member of insulating material is slideably mounted on the blades and is connected to a plunger assembly. The plunger assembly is used to move the member between two positions. In one position, the ends of the blades are exposed for insertion into a connector for engagement with the contact elements therein. Upon movement of the member from this position, the member engages the connector assembly and facilitates extracting the blades from the assembly. In the other position, the member covers the ends of the blades and is shaped to guide the blades into engagement with the contact elements on the board.

3,693,088
DIVERSITY SYSTEM FOR MOBILE RADIO USING FADE RATE SWITCHING

Anthony Joseph Rustako, Jr., Colts Neck, and Yu Shuan Yeh, Spotswood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1970, Ser. No. 102,422
Int. Cl. H04b 7/08
U.S. Cl. 325—56 12 Claims

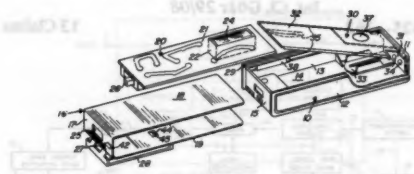


A mobile radio system having a plurality of base station transmitting antennas for each channel. When the mobile receiver encounters a fading signal level from the antenna then in use, it transmits an out of message band signal back to the base station which commands the base to switch to a different antenna thus providing diversity on the base to mobile link. Particular circuits are provided to discriminate between rapid Rayleigh fades and slow shadowing fades and to transmit a command for an antenna switch based on the Rayleigh fades.

3,693,089
HOUSING ASSEMBLY FOR MINIATURE RADIO APPARATUS WITH SELF CONTAINED BATTERY

Thomas R. Hutchinson, Sunrise Golf Village, and Marco Hans Lombard, Miami, both of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 20, 1971, Ser. No. 145,165
Int. Cl. H04b 1/08
U.S. Cl. 325—119 12 Claims

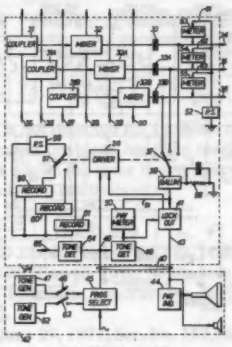


Housing assembly for miniature radio apparatus, such as a radio pager, having a molded frame member which houses the chassis and forms one end and two opposite outer sides of the housing. Space for a battery is provided adjacent the end of the housing formed by the frame member. A flexible plastic insulating member has a central part secured to the end of the frame member with flaps covering the chassis and the battery. A U-shaped cover member slides in grooves in the frame member to form the other end and the other two outer sides of the housing, thereby providing a completely enclosed housing. The cover bears against the flaps to hold the chassis and battery in the proper positions within the housing. The cover can slide with respect to the frame member to open the housing at one end to afford access to the battery. A spring biased detent is secured to the frame member, which cooperates with an opening in the cover member to hold the cover completely closed. This detent can be overriden to permit the cover to slide part way open for access to the battery. The detent engages a tongue at a further opening in the cover to prevent further movement of the cover with respect to the housing, preventing access to the radio chassis. A key may be provided to release the detent from the tongue for removal of the cover from the frame member.

3,693,090
WIRED BROADCASTING SYSTEMS

Ralph Parton Gabriel, Woking, England, assignor to Communications Patents Limited

Filed Aug. 8, 1969, Ser. No. 848,567
Claims priority, application Great Britain, Aug. 9, 1968, 38,108/68
Int. Cl. H04b 3/28, 3/50; H04n 7/10
U.S. Cl. 325—308 14 Claims

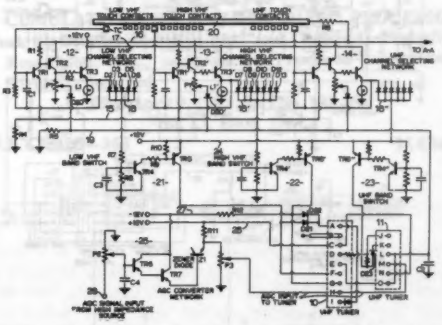


A wired broadcasting system for television transmission from a plurality of sources to individual subscriber stations has switching apparatus at a central station actuated by signals at the subscriber station. A four wire cable arrangement to each subscriber provides two control wires and two signal wires. Provision for station selection, audience response and numbers of subscribers is made through use of time signals passed through the control wires. Provisions for accepting charges and recording the time in use are made at the central station.

3,693,091
AGC SWITCHING NETWORK FOR DUAL TUNERS OF A TV RECEIVER

William G. Russell, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada

Filed Oct. 2, 1970, Ser. No. 77,414
Int. Cl. H04b 1/16
U.S. Cl. 325—319 6 Claims



A signal receiver of a type that includes an AGC network that provides an AGC signal and also of a type that employs two different tuners has an AGC switching network for supplying the AGC signal to either one of the tuners provided that

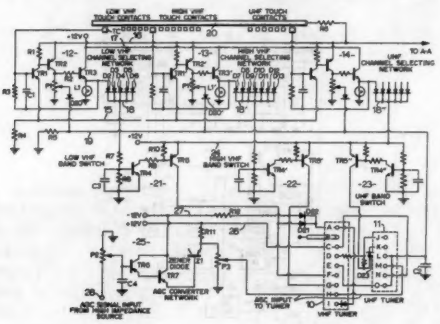
power is also supplied thereto and for preventing the AGC signal from being supplied to an unpowered one of the tuners.

3,693,092

AGC IMPEDANCE CONVERTER FOR VARACTOR DIODE TUNER

William G. Russell, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Oct. 2, 1970, Ser. No. 77,525
Int. Cl. H04b 1/16
U.S. Cl. 325—319 8 Claims



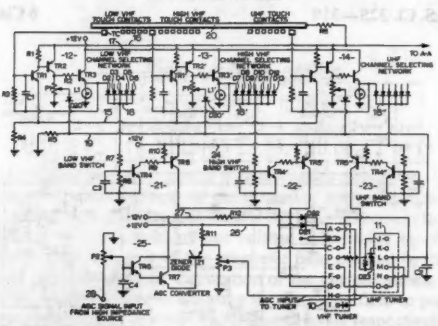
A signal receiver of a type including an AGC network providing an AGC signal and also a type employing a varactor tuner is provided with an AGC converter network to convert the AGC output signal to a level and source impedance suitable for use with the tuner.

3,693,093

AGC IMPEDANCE CONVERTER AND VOLTAGE LEVEL SHIFTER FOR HIGH IMPEDANCE SOURCE

William G. Russell, Kitchener, Ont., Canada, assignor to Electrohome Limited, Ontario, Canada

Filed Oct. 2, 1970, Ser. No. 77,656
Claims priority, application Great Britain, Oct. 7, 1969, 49,151/69
Int. Cl. H04b 1/16
U.S. Cl. 325—319 7 Claims



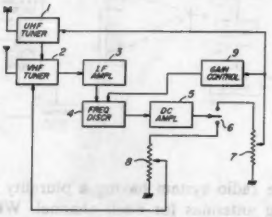
A signal receiver of a type including an AGC network providing an AGC signal and also of a type employing a varactor tuner is provided with an AGC converter network to convert the AGC output signal to a level and source impedance suitable for use with the tuner.

3,693,094

APPARATUS FOR SUPERIMPOSING AN AFC VOLTAGE ON UHF AND VHF TUNING VOLTAGES FOR CHANNEL SELECTION

Toshiji Kanamaru; Katsumi Morita, both of Kadoma, and Akio Okada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 22, 1970, Ser. No. 48,407
Claims priority, application Japan, June 25, 1969, 44/51424; June 27, 1969, 44/51992
Int. Cl. H04b 1/16
U.S. Cl. 325—461 5 Claims



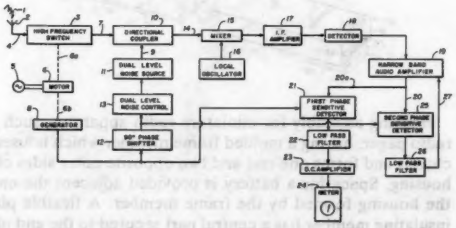
In impressing both a tuning voltage and an AFC voltage in superimposition upon each other on the UHF and VHF tuners in a television set, a voltage produced by superimposing a pre-regulated tuning voltage and an AFC voltage upon each other is impressed on the UHF tuner and a voltage produced by regulating a voltage obtained by superimposing a constant DC voltage and the AFC voltage upon each other is impressed on the VHF tuner, thus ensuring reliable selection of channels in either UHF or VHF band.

3,693,095

RADIOMETER GAIN CONTROL REFERENCE

Robert E. Wilt, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed Oct. 28, 1970, Ser. No. 84,677
Int. Cl. G01r 29/08
U.S. Cl. 325—363 13 Claims

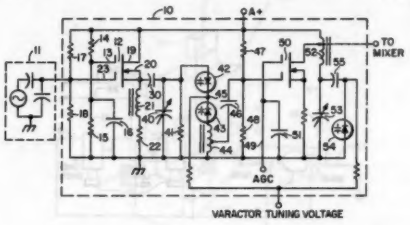


An improved high frequency radiometer features elimination of loss of its calibration due to undesired long-term gain changes through the addition of a quadrature modulation signal path in the radiometer receiver as a means of coupling a gain control reference signal into the radiometer receiver. The gain control reference signal is ultimately separated at the output of the radiometer receiver and provides a feed back signal to correct for undesired receiver gain changes. The gain control reference signal is generated by improved means permitting the cyclic modulation of the temperature of a heated fine wire element coupled to the radiometer receiver.

3,693,096
ANTENNA COUPLING AND R. F. TUNING CIRCUIT

Charles M. Dosey, 1919 Rolling Glen Rd., Baltimore, Md.; John B. Howell, Belfast Rd., Sparks, Md., and Silvio Soares, 7031 Heathfield Rd., Baltimore, Md.

Filed Dec. 1, 1970, Ser. No. 94,047
Int. Cl. H04b 1/10
U.S. Cl. 325—374 5 Claims

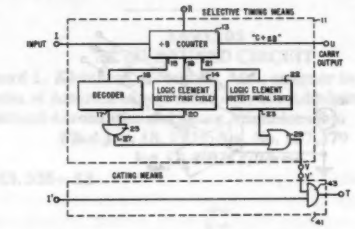


An electrical circuit for coupling a capacitive antenna to a radio receiver is disclosed. A field effect transistor has a gate connected directly to the antenna and a source connected to a resonant circuit for tuning. The field effect transistor isolates the capacitance of the antenna from the tuning circuit thereby rendering the antenna capacitance non-critical to the performance of the receiver. The generation of harmonic energy in the field effect transistor is minimized by connecting high impedance circuitry between the source of the field effect transistor and ground thereby minimizing the voltage developed across the gate-channel junction of the field effect transistor. Embodiments employing capacitive tuning, adapted to use varactors, and inductive tuning, adapted to use slug-tuned coils, are disclosed.

3,693,097
GATE CONTROL APPARATUS FOR SETTING THE INPUT SIGNAL COUNTING INTERVAL

Ian T. Band, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 4, 1970, Ser. No. 69,534
Int. Cl. H03k 21/00, 23/00
U.S. Cl. 328—39 4 Claims



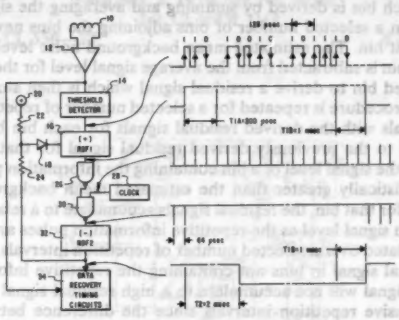
A decade counting and displaying assembly are combined with a reference frequency source, pulse shaper, gate control apparatus and conventional logic elements to provide a frequency measuring device that automatically determines a time interval during which the frequency of an input signal is counted. The same components are used to provide a multiperiod averaging device that automatically determines a number of periods an input signal is to be averaged.

3,693,098
DATA RECOVERY TIMING CONTROL CIRCUIT

Ernesto G. Sevilla, 927 Ridgewood Rd., Herkimer, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,929
Int. Cl. G01r 29/02; H03k 5/00, 5/13
U.S. Cl. 328—130 22 Claims

A data block bit sequence detector requiring the use of only two re-triggerable one-shot multivibrators. The multivibrators are connected in series, and the output of the second controls the width of the pulse generated by the first. A block of data is determined to be present if data bits are detected at intervals of at most 200 microseconds for a period of 2 milliseconds.

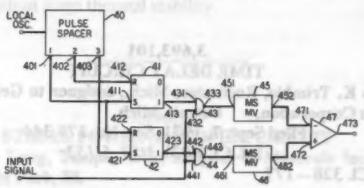


Thereafter, if a bit is not detected for 1 millisecond, it is an indication that the end of the block has been reached. The multivibrator feedback allows the three timing functions to be accomplished with only two multivibrators.

3,693,099
DEAD ZONE PHASE DETECTOR

James Francis Oberst, Howell Twp., Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1971, Ser. No. 157,960
Int. Cl. H03b 3/12
U.S. Cl. 328—134 6 Claims

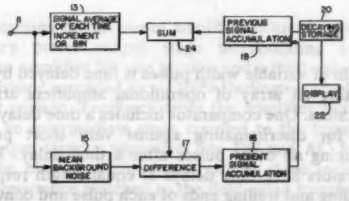


A phase detector is arranged so as to have a dead zone in its transfer characteristic in the region near zero phase error. The dead zone is achieved with various delay elements arranged so as to block the phase detector output when the reference and test signals are nearly synchronized. At other times positive or negative pulses are generated, depending on whether there is a leading or lagging phase error. These pulses are combined in a summing amplifier to produce the phase detector output.

3,693,100
CUMULATIVE ENHANCEMENT SIGNAL PROCESSOR

Buck C. Brown, Rockville, Md., and Charles D. Porterfield, Kensington, Md., assignors to Presearch Incorporated, Silver Springs, Md.

Filed April 9, 1971, Ser. No. 132,890
Int. Cl. H03k 5/18
U.S. Cl. 328—165 11 Claims



A cumulative enhancement signal processor for improving the detection of repetitive signals in a noisy background which

signals exist during each of a plurality of repetition intervals Each repetition interval is divided into a plurality of discrete time intervals called bins. The average signal level in each bin is determined and the estimated mean background noise level for each bin is derived by summing and averaging the signal level in a selected number of bins adjoining the bins next to the test bin. The estimated mean background noise level for each bin is subtracted from the average signal level for the associated bin to derive a residual signal which is then stored. This procedure is repeated for a selected number of repetition intervals with the derived residual signals for each bin being added to the previously derived residual signal for that bin. Since the signal level of a bin containing the information pulse is statistically greater than the estimated mean background noise for that bin, the residual signals accumulate to a relatively high signal level as the repetitive information pulses are accumulated over a selected number of repetition intervals. The residual signal in bins not containing the repetitive information signal will not accumulate to a high residual signal over successive repetition intervals since the difference between the estimated mean background noise level for such bins and the average signal level thereof will tend to zero.

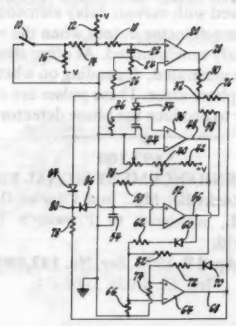
If the information signal is shifting timewise with respect to the repetition interval, a plurality of the aforementioned signal processors are connected in parallel with the discrete time intervals or bins generated by each processor being shifted with respect to time at varying rates. Thus, a high accumulation signal will occur in only the processor having its bins shifted at the same rate that the information signal is shifting with respect to the repetition interval. The output of the processor having the highest peak accumulated signal is detected and displayed by an output device.

3,693,101

TIME DELAY CIRCUIT

Philip K. Trimble, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,344
Int. Cl. H03k *3/53, 5/153*
U.S. Cl. 328—177 **3 Claims**



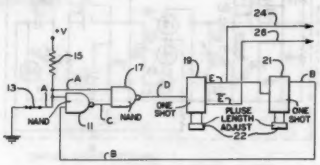
A train of variable width pulses is time delayed by a circuit comprising an array of operational amplifiers arranged as comparators. One comparator includes a time delay and filter circuit for discriminating against very short pulses and reproducing all other pulses after a time delay. Two other comparators have time delays of equal length responsive to the leading and trailing ends of each pulse and control a final comparator which reproduces the original pulse train except for the very short pulses.

3,693,102

DIGITAL OSCILLATOR HAVING A FAST RESPONSE USING TWO ONE-SHOT MULTIVIBRATORS AND A PAIR OF NAND GATES

Kenneth G. Harf, Binghamton, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed May 27, 1971, Ser. No. 147,425
Int. Cl. H03k *3/02*
U.S. Cl. 328—188 **9 Claims**



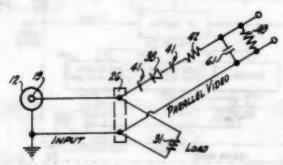
A digital oscillator which provides fast response and permits variable frequencies and pulse widths is shown. By combining two gates and two one-shot multivibrators a circuit is provided which will begin to have outputs as soon as the input gate is enabled. Pulse width and repetition rate is adjusted by varying the time constants of the one shots. In addition a crosshatch of dot generator useful in television display adjustment which uses two of the oscillators to obtain its output is shown.

3,693,103

WIDEBAND DETECTOR FOR USE IN COAXIAL TRANSMISSION LINES

Robert B. Mouw, Menlo Park, Calif., assignor to Aertech, Sunnyvale, Calif.

Filed Aug. 6, 1971, Ser. No. 169,648
Int. Cl. H03d *9/02*
U.S. Cl. 329—162 **15 Claims**



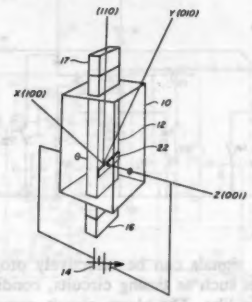
Coaxial line apparatus forming a termination and detector for high frequency signals. An input coaxial transmission line has an inner conductor and an outer conductor. The input coaxial transmission line is branched into a load transmission line and a parallel video transmission line. The load transmission line has inner and outer conductors and a matching impedance connected between the inner and outer conductors for terminating the load transmission line. The parallel transmission line has a separate outer conductor and inner conductive means. The inner conductive means include a crystal diode mounted at an angle with respect to the axis of the parallel transmission line outer conductor. The parallel transmission line outer conductor has an apertured portion substantially aligned with the crystal diode so that the crystal diode can be inserted or removed through the apertured portion. The parallel transmission line also includes additional impedances for attenuating relatively high frequency signals.

3,693,104

PHONON GENERATION HANDLING AND DETECTION

Isaac F. Silvera, Thousand Oaks, and Lawrence A. Vredevoe, Santa Monica, both of Calif., assignors to North American Rockwell Corporation

Filed June 5, 1970, Ser. No. 43,731
Int. Cl. H01s 1/00
U.S. Cl. 330—5.5 14 Claims



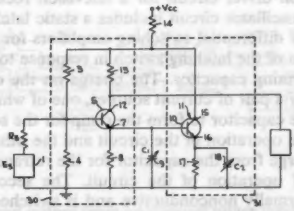
Microwave pumping of an alkali halide crystal doped with hydroxyl electric dipole impurity ions and subjected to a (001) dc electric field, will increase the population of the $3A_1$ dipolar energy level (the energy level notation applies to the usual case of preferred alignment of the hydroxyl dipoles along the (100) axes, such as in KCl) of the impurity ion when the microwave frequency is in resonance with the $1A_1$ $3A_1$ transition. Relaxation rates between various dipolar energy levels are shown to produce a population inversion between the $3A_1$ and $1B_1$ states and also between $2A_1$ and $1A_1$ states. Either spontaneous relaxation or stimulated relaxation from $3A_1$ $1B_1$ produces phonons having a preferred transverse polarization and a direction of propagation along the (110) axes of the crystal system. Tuning of the output beam of phonons over a phonon frequency range of about 10^9 to 10^{11} Hz is achieved by a variation of the dc field. Variation of phonon absorption of an unpumped crystal in accordance with applied dc electric field and the depolarization induced by such absorption are employed to achieve modulation and detection, respectively, of a transmitted phonon beam.

3,693,105

ACTIVE TUNED CIRCUIT

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 18, 1971, Ser. No. 107,379
Int. Cl. H03f 3/04
U.S. Cl. 330—12 9 Claims



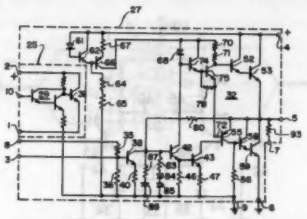
Active tuned circuit configurations particularly suitable for microelectronic construction as filters, amplifiers, and oscillators for operation near the F_t of the transistors employed. A high Q, tunable network at a frequency near F_t is provided by coupling a second bipolar transistor configuration to the emitter of a first bipolar transistor in order to provide negative resistance and capacitive reactance as necessary to tune the low Q inductive value of the first bipolar transistor.

3,693,106

STABLE POWER AMPLIFIER CIRCUIT

Ernest L. Long, 33 E. Erie, Tempe, Ariz., and Charles M. Ring, 817 Melody Lane, Tempe, Ariz.

Filed Nov. 2, 1970, Ser. No. 79,003
Int. Cl. H03f 3/18
U.S. Cl. 330—17 9 Claims



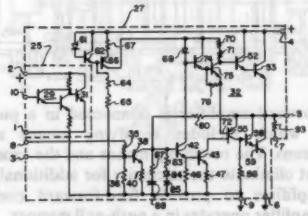
An integrated circuit power amplifier utilizes a quasi-complementary power output stage incorporating an NPN Darlington amplifier for one section and a field-aided lateral PNP transistor cascaded to an NPN Darlington amplifier for the other section. Feedback from the amplifier output terminal to an intermediate stage coupled to the input of the power output stage is separated into DC and AC feedback paths. The biasing of the power output stage includes an epitaxial resistance matched to the field-aided transistor bulk resistance to cancel the effect of the bulk resistance for improved output stage thermal stability.

3,693,107

STABLE POWER AMPLIFIER CIRCUIT

Ernest L. Long, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Nov. 2, 1970, Ser. No. 79,004
Int. Cl. H03f 3/18
U.S. Cl. 330—17 7 Claims

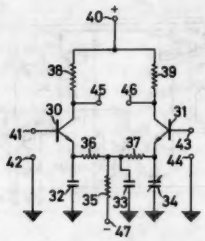


An integrated circuit power amplifier utilizes a quasi-complementary power output stage incorporating an NPN Darlington amplifier for one section and a field-aided lateral PNP transistor cascaded to an NPN Darlington amplifier for the other section. Feedback from the amplifier output terminal to an intermediate stage coupled to the input of the power output stage is separated into DC and AC feedback paths. The biasing of the power output stage includes an epitaxial resistance matched to the field-aided transistor bulk resistance to cancel the effect of the bulk resistance for improved output stage thermal stability.

3,693,108
SEMI-BALANCED AMPLIFIER

Nobuaki Iijima, and Tohru Takahashi, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 790,751, Jan. 13, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 96,841
Claims priority, application Japan, Jan. 26, 1968, 43/4259
Int. Cl. H03f *3/68*
U.S. Cl. 330—21 **29 Claims**

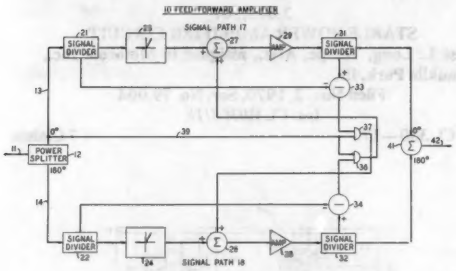


This invention relates to a semi-balanced amplifier which is able to reduce drift by the parallel connection of two amplifying elements such as transistors, vacuum tubes, etc. to a power source and thus amplifying, by means of said amplifying elements, a pair of input signals applied to each of input terminals of the respective amplifying elements.

3,693,109
PUSH-PULL FEED-FORWARD AMPLIFIER

Richard Barry Swerdlow, Haverhill, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 13, 1971, Ser. No. 207,085
Int. Cl. H03f *1/28*
U.S. Cl. 330—81 **5 Claims**



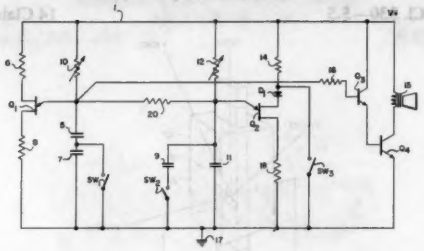
A feed-forward amplifier is connected in a push-pull arrangement which includes rectifying means and cross-coupling means. The rectifying means and the cross-coupling arrangement eliminate the necessity for additional error-correction amplifiers to provide feed-forward compensation while the amplifier operates in a push-pull manner.

3,693,110
AUDIBLE SIGNAL OR ALARM DEVICE INCLUDING TWO VARIABLE FREQUENCY UNIJUNCTION TRANSISTOR OSCILLATORS

Charles A. Briggs, Jr., Glenside, and Walter H. Vogelsberg, Carversville, both of Pa., assignors to C. A. Briggs Company, Glenside, Pa.

Filed Feb. 23, 1971, Ser. No. 118,049
Int. Cl. G08b *3/10, 19/00;* **H03b** *3/04*
U.S. Cl. 331—47 **8 Claims**

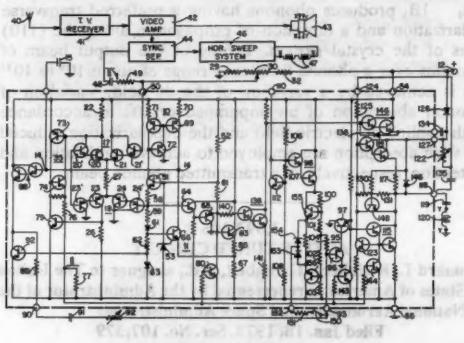
An audible signal or alarm circuit capable of selectively providing different output signals is disclosed. The circuit is capable of providing a steady output signal, a varying frequency output signal, different rates at which the frequency of the output signal is varied and different basic varying frequency signals. The alarm circuit may be used alone or in connection with any sensing or measuring circuitry, such as fire detectors, intrusion detection systems or the like. In addition, the different output signals can be selectively programmed using simple devices such as timing circuits, condition responsive circuits or the like. The alarm circuit comprises a pair of unijunction transistors, an amplifier circuit, a speaker and switching means used to obtain the various different output signals.



3,693,111
SAWTOOTH OSCILLATOR CIRCUIT

Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 4, 1971, Ser. No. 112,708
Int. Cl. H03k *3/08*
U.S. Cl. 331—111 **11 Claims**



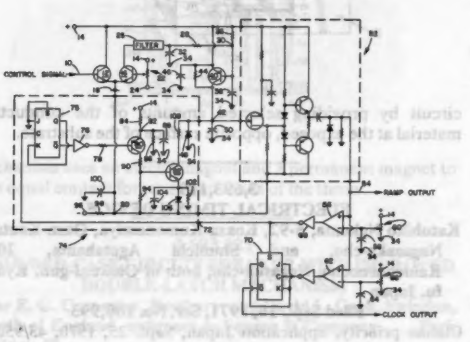
A monolithic integrated sawtooth oscillator and vertical deflection coil driver circuit for a television receiver is disclosed. The oscillator circuit includes a static latching switch and a pair of differential switching amplifiers for controlling the operation of the latching switch in response to the charge on a saw-forming capacitor. The charge on the capacitor is controlled by a pair of current sources, one of which supplies charge to the capacitor to form the ramp for the scan portion of each cycle operation of the circuit and the other of which removes charge from the capacitor for the retrace portion of the cycle of operation of the circuit. The second current source is normally nonconductive and is switched into conduction by the operation of the switching amplifiers and static latching switch when a predetermined charge is attained by the capacitor. Also disclosed are a vertical deflection drive circuit in which the output transistors are part of the integrated circuit. The drive circuit has a provision for providing increased potential to the vertical deflection coil during the retrace portion of the cycle of operation without necessitating the handling of high voltages by the output transistors of the circuit.

3,693,112

SIGNAL CONTROLLED WIDE RANGE RELAXATION OSCILLATOR APPARATUS

Barry D. Briggs, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed March 12, 1971, Ser. No. 123,499
Int. Cl. H03b 3/04; H03k 3/28
U.S. Cl. 331—111 7 Claims



A wide range oscillator which can operate over approximately a 10^4 frequency range. The oscillator uses a current controlled ramp generator which varies the charging rate of an integrating capacitor. The wide range of charging current plus a low discharge time of the integrating capacitor combines to enable a very wide frequency range oscillator.

ERRATUM

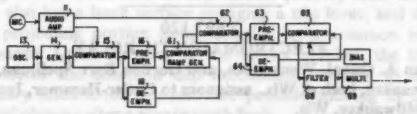
For Class 331—107 G see:
Patent No. 3,693,118

3,693,113

SERRASOID PHASE MODULATOR

James R. Glasser, R.R. 4, Box 173A, c/o Crusoe Ranch, Cheboygan, Mich., and Stanley J. Tomsa, 1130 Ontario St., Oak Park, Ill.

Continuation-in-part of Ser. No. 805,711, March 10, 1969, abandoned. This application Sept. 10, 1970, Ser. No. 71,174
Int. Cl. H03k 7/00, 5/20
U.S. Cl. 332—9 R 10 Claims



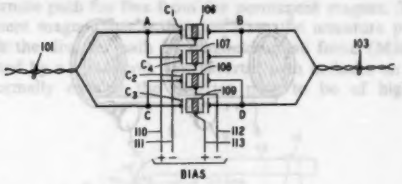
The desired output from a serrasoid phase modulator, a narrow variable position pulse, is obtained from a variable width pulse by means of a differential amplifier. The high frequency components of the variable width pulse are both pre-emphasized and de-emphasized with the pre-emphasized pulse being coupled to one input of the differential amplifier and the de-emphasized pulse being coupled to the other input of differential amplifier. By varying the bias on the differ-ential amplifier a pulse as narrow as desired can be obtained without loss of pulse amplitude.

3,693,114

CABLE SECTIONS WITH NONMECHANICAL MEANS TO EFFECT COUPLING

Raymond Andrew Kempf, Towson, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 881,976, Dec. 4, 1969. This application June 7, 1971, Ser. No. 150,591
Int. Cl. H01p 5/14
U.S. Cl. 333—7 1 Claim



This disclosure describes a scheme for interconnecting telephone cable pairs at a cable junction using remotely controlled devices.

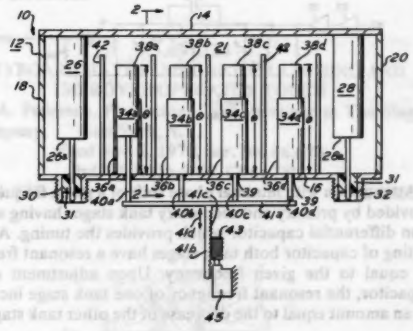
A material with a dielectric constant that can be varied by applied electrical bias is employed as the dielectric of capacitors connected in a lattice. The lattice permits transmission of an ac signal between two pairs when the bias is adjusted to provide an unbalanced condition; or alternatively, blocks transmission when the bias balances the lattice.

3,693,115

MECHANICAL TUNABLE BANDPASS FILTER

William A. Edson, Los Altos Hills, Calif., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Dec. 28, 1970, Ser. No. 101,988
Int. Cl. H03j 3/26
U.S. Cl. 333—73 R 7 Claims

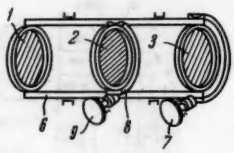


A filter including a closed conducting housing having a pair of side walls which are the ground planes of the filter. Input and output rods of fixed length are mounted in spaced relation between the side walls. A plurality of resonator bars are between the side walls and in spaced relation between the input and output rods. The electric and magnetic coupling between each pair of adjacent bars is controlled by fixed septa or partitions having a special shape. The resonator bars are movable and are adapted to be varied in length in unison so as to tune the filter. The various fixed dimensions and especially those of the partitions between adjacent resonators are chosen so as to maintain the width of the transmission passband substantially constant or variable in a desired manner, while the passband frequencies are shifted by tuning.

3,693,116
ATTENUATOR FOR MILLIMETER AND SUBMILLIMETER WAVEBANDS OF ELECTROMAGNETIC RADIATION

Evgeny Alexandrovich Vinogradov, Kozhevnicheskaya ulitsa, 1b, kv. 33, and Nataliya Alexandrovna Irisova, ulitsa Vavilova, 44, korpus 4, kv. 74, both of Moscow, U.S.S.R.

Filed June 29, 1970, Ser. No. 50,432
Int. Cl. H01p 1/22
U.S. Cl. 333—81 R **4 Claims**

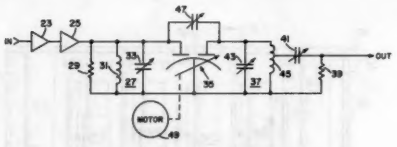


An attenuator for millimeter and submillimeter wavebands of electromagnetic radiation, comprising at least three reflectors each of which is made as a series of parallel conductors the shortest distance between which is less than the wavelength of the selected electromagnetic radiation and which are secured on a common frame, the reflectors being positioned in non-parallel planes and provided with means allowing them to rotate about the attenuator axis, while the attenuation factor is determined by the angle between the respective conductors of adjacent reflectors.

3,693,117
PHASE STABLE VARIABLE ATTENUATOR

Robert E. Byrns, 107 Shoreview Dr., Liverpool, N.Y.; Hugh W. Gouldthorpe, Nelson Rd., R.D. 3, Cazenovia, N.Y., and Vernon L. Lamison, 13 Huckleberry Lane, Liverpool, N.Y.

Filed March 25, 1971, Ser. No. 127,904
Int. Cl. H03h 7/10
U.S. Cl. 333—81 R **1 Claim**



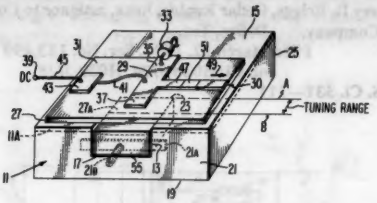
Attenuation with minimal phase shift of a given frequency is provided by primary and secondary tank stages having a common differential capacitor which provides the tuning. At zero setting of capacitor both tank stages have a resonant frequency equal to the given frequency. Upon adjustment of the capacitor, the resonant frequency of one tank stage increases by an amount equal to the decrease of the other tank stage.

3,693,118
VARIABLE TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE CIRCUIT

Adolph Presser, Kendall Park, N.J., assignor to RCA Corporation

Filed Dec. 9, 1971, Ser. No. 206,390
Int. Cl. H03b 7/14
U.S. Cl. 331—107 G **5 Claims**

A tuning arrangement is provided for a strip transmission line circuit of the type including a ground plane or conductor and a narrow conductor spaced from the ground plane by a dielectric substrate. A portion of the ground plane immediately below and spaced from the narrow conductor by the substrate is removed, leaving a portion of the dielectric substrate surface opposite that which supports the narrow conductor exposed. An element having a conductive surface tunes the

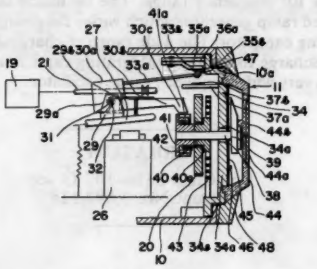


circuit by providing selected amounts of the conductive material at the exposed, opposite surface of the substrate.

3,693,119
ELECTRICAL TIMING DEVICE

Katuhiko Nakama, 5-92, Koaza-Kumonomiya, Oaza-Kautari, Nagasaka-cho, and Shunichi Agatahama, 20-9, Kaidenuenocho, Nagaska-cho, both of Otokuni-gun, Kyoto-fu, Japan

Filed Sept. 16, 1971, Ser. No. 180,995
Claims priority, application Japan, Sept. 25, 1970, 45/95041
Int. Cl. H01h 7/14
U.S. Cl. 335—59 **7 Claims**



An electrical timing device having at least one pair of time-limit switching contacts to be operated in response to respective first and second states of operation of an electromagnet device. This timing device is provided with a spring clutch assembly capable of permitting the rotation of a cam disc together with a driven gear driven by the motor unless otherwise the cam disc is obstructed and also for permitting the rotation of the driven gear independent of the rotation of cam disc, whereby change of the interval of a desired preset time during which the timing device is operated can be varied as desired.

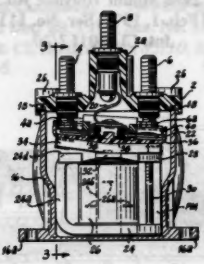
3,693,120
ELECTROMAGNETIC RELAY

John A. Quaal, Wauwatosa, and Gordon Barr Spellman, Milwaukee, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 23, 1971, Ser. No. 155,793
Int. Cl. H01h 51/06
U.S. Cl. 335—128 **10 Claims**

Improved contact structure for a relay. In a double-throw version, two spaced helical springs for each pole are partially compressed between a spring support and the movable contact to provide initial contact pressure. A contact support overlies the movable contact and screws secure all of these parts on top of a rockable armature. In a single-throw version, normally open or normally closed, only one helical compression spring per pole nearest the closing end of the contact may be used to provide initial contact pressure; and a dummy load is provided at the non-closing end of the movable contact to

afford the same operating characteristics in the single-throw relay as in the double-throw relay since the operating



mechanism uses an electromagnet and a permanent magnet to give equal contact forces at both ends of the throw.

3,693,121

MOULDED-CASE CIRCUIT BREAKER WITH IMPROVED DOUBLE-LATCH MECHANISM

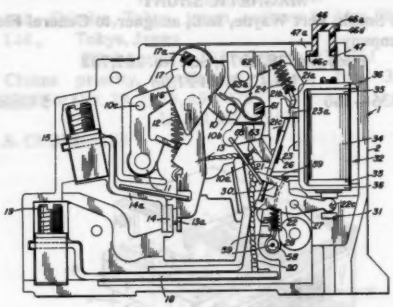
Peter E. G. Carpenter, Newbury, and David L. Cook, Swindon, both of England, assignors to Square D Company, Park Ridge, Ill.

Filed May 13, 1971, Ser. No. 142,975

Claims priority, application Great Britain, Jan. 26, 1971, 03,236/71

Int. Cl. H01h *9/24*

U.S. Cl. 335—169 **4 Claims**



A double latch mechanism for a molded-case circuit breaker suitable for earth-leakage protection, including a centrally pivoted secondary latch lever having one end connected to the plunger of a tripping solenoid. The other end of the secondary latch lever is bifurcated, one projecting portion serving as a latch surface for a pivotable primary latch lever which also has a latch surface engaging a trip lever, and the other projecting portion being coupled to a common trip mechanism. Upon resetting of the circuit breaker, the trip lever drives the common trip mechanism coupled to the secondary latch lever to overcome possible sticking of the solenoid plunger after a severe earth fault.

3,693,122

FLUX TRANSFER TRIP DEVICE FOR ELECTRIC CIRCUIT BREAKERS

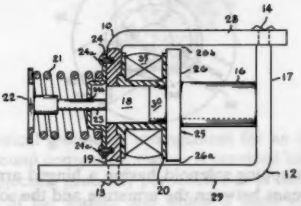
Henry G. Willard, Wethersfield, Conn., assignor to General Electric Company

Filed May 13, 1971, Ser. No. 142,942

Int. Cl. H01f *3/12*

U.S. Cl. 335—174 **11 Claims**

A sensitive magnetic trip device, adapted especially for use with an electric circuit breaker for operation by a relatively low power trip signal pulse, such as that developed by a zero-sequence or differential transformer indicating presence of a ground fault condition. The device is also highly suitable for use with "static" or solid-state trip circuits operating in response to signals generated by current transformers associated with phase conductors of a multi-phase system. The trip device includes a magnetic armature normally held in a retracted position against the bias of a tripping spring by flux generated by a permanent magnet. The trip device includes a magnetic frame member and a "flux-diverter" interposed between the armature and the permanent magnet, providing an alternate path for flux from the permanent magnet. The permanent magnet flux is diverted from the armature path through the diverter path by magnetomotive force (MMF) generated by a signal coil. The diverter path includes an air gap normally causing the diverter path to be of higher



reluctance than the path through the armature. Upon the occurrence of a trip signal of predetermined magnitude through the trip coil, magnetomotive force (MMF) generated by the trip coil opposes the flow of permanent magnet flux through the armature and diverts it through the diverter path, including the air gap, causing release of the armature. The armature is dimensioned with respect to the diverter so that the armature is driven to saturation by extra high current through the trip coil. This limits the flow of flux from the trip coil, thereby preventing demagnetization of the permanent magnet upon occurrence of such high trip signal currents. The "flux-diverter" is formed and dimensioned so that in combination with the permanent magnet, the frame, and the trip coil, it minimizes stray flux and maximizes sensitivity and effectiveness of the device.

3,693,123

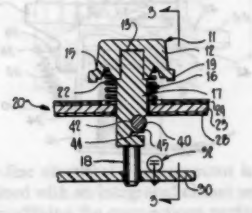
KEYBOARD HAVING MAGNETIC LATCHING AND IMPROVED OPERATOR TOUCH

Egon A. Pedersen, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,678

Int. Cl. H01h *9/00*; **G06c** *7/02*

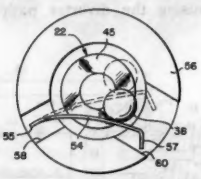
U.S. Cl. 335—206 **12 Claims**



A keyboard comprising a plurality of key assemblies mounted in a mounting member and a base member. Each key assembly is provided with a magnet which provides both a magnetic latching and an electrical switching action. The mounting member is constructed from a magnetic material having low magnetic remanence and is provided with an upper layer of resilient, foam material to provide key cushioning and a lower layer of resilient material to space the magnet from the

mounting member. Each key assembly is also provided with a means for preventing formation of a vacuum between the bottom of an actuated key and the upper resilient layer of the mounting member.

3,693,124
ROTARY STEPPING SOLENOID
Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronics, Inc., Clifton Springs, N.Y.
Filed Nov. 27, 1970, Ser. No. 93,360
Int. Cl. H01f 7/08
U.S. Cl. 335—228 **19 Claims**



A rotary stepping solenoid having a hinged armature and converter means between the armature and the solenoid output shaft for converting arcuate moment of the armature to rotary movement of the output shaft. This rotary stepping solenoid is similar in operation and construction to known rotary solenoids of the hinged armature type except for the additional structure of:

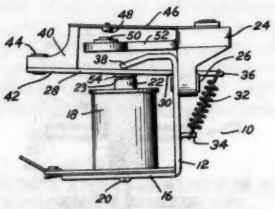
1 a plurality of ball race cams in an upper surface of the output shaft,

2 the armature being spring biased into its upper de-energized position,

3 detent means for holding the output shaft in the position to which it has been moved, and

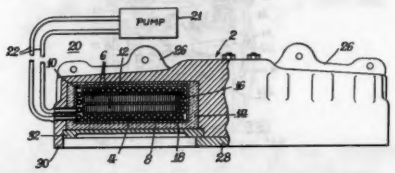
4 a spring arm for moving the converter ball up into the armature cam and out of contact with the shaft cam but in operative position with respect to the next succeeding cam in the upper surface of the output shaft.

3,693,125
RELAY ACTUATOR UTILIZING A RESILIENT, IRON IMPREGNATED PAD
Robert E. Prouty, Logansport, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.
Filed Sept. 24, 1970, Ser. No. 75,078
Int. Cl. H01f 7/08
U.S. Cl. 335—271 **8 Claims**



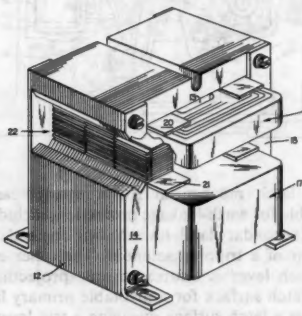
An improvement to an electromagnetic actuator having a coil designed for use with DC current or rectified AC current is provided. The actuator includes an armature mounted for movement in relation to the coil in response to the energization of the coil. A resilient pad impregnated with soft iron particles is provided for directly contacting the pole face of the coil and the armature simultaneously when the armature is actuated by the coil.

3,693,126
COOLING MEANS FOR LIFTING MAGNET
James P. Rybak, 2996 Mount Holyoke Rd., Columbus, Ohio
Filed Feb. 1, 1971, Ser. No. 111,563
Int. Cl. H01f 7/20
U.S. Cl. 335—291 **4 Claims**



A magnet for lifting high temperature materials is disclosed as having a metal case, an electrical winding enclosed within the metal case for producing a magnetic field and thermal insulation surrounding the winding and separating it from the metal case. A cooling medium is circulated about the winding within the thermal insulation by a cooling means which may include a pump and hose carrying the cooling medium and connecting the pump to the metal case. The thermal insulation serves to prevent the cooling medium from attempting to cool the metal case.

3,693,127
MAGNETIC SHUNT
Harold J. Smith, Fort Wayne, Ind., assignor to General Electric Company
Filed Jan. 28, 1972, Ser. No. 221,732
Int. Cl. H01f 21/08
U.S. Cl. 336—160 **5 Claims**



A transformer having an improved magnetic shunt is disclosed. The transformer has a magnetic core which comprises at least a pair of legs defining walls of a window into which the assembled shunt is placed.

The shunt comprises a plurality of laminations and includes at least a group of rectangular laminations having a pair of parallel, elongate edges with projections and cutout sections respectively disposed in that pair of edges. The laminations of the group are dimensioned so that the parallel elongate edges simultaneously abut both legs of core window.

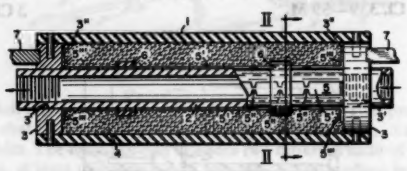
The laminations are assembled in a stacked relation. The laminations in the group may be oriented so that when the shunt is disposed in the core window, the similar edges of some of those laminations will abut one of the core legs and the similar edges of the remainder of the laminations in the group will abut the other of the core legs.

3,693,128

CONVECTION COOLED FUSE

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Dec. 28, 1970, Ser. No. 102,255
Int. Cl. H01h 85/04, 85/10, 85/14
U.S. Cl. 337—166 3 Claims



An electric fuse adapted to be cooled by a flow of cooling medium in axial direction flowing through the center of the fuse, the ribbon fuse links being arranged in close proximity to the radially outer surface of the passageway means for the cooling medium and the ribbon fuse link.

ERRATUM

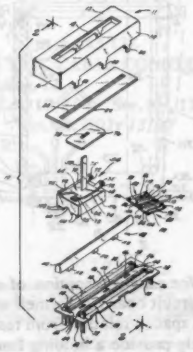
For Class 338—92 see:
Patent No. 3,693,062

3,693,129

VARIABLE RESISTOR

Yutaka Shimizu, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed April 12, 1971, Ser. No. 133,211
Claims priority, application Japan, July 31, 1970, 45/76556; Oct. 29, 1970, 45/107597
Int. Cl. H01c 9/02
U.S. Cl. 338—183 10 Claims



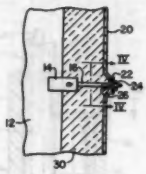
A variable resistor includes an elongated housing, a dielectric base which supports elongated resistive and conductive strips, and a cover member. An elongated guide rail is mounted on the dielectric base and extends parallel to the resistive and conductive strips. A slider or carrier is provided with a groove at the lower surface thereof for slidably engaging the upper surface of the guide rail of the base. A control member is connected to the upper end of the slider and projects through an elongated slot in the cover member. A resilient member is so positioned between an upper surface of the slider and the inner surface of the top wall of the cover member that the slider is pushed evenly onto the guide rail. Thus, when the position of the slider is altered by the control member, the sliding contacts are moved evenly along the resistive and conductive elements without skipping, jumping or derailing therefrom.

3,693,130

OVEN LINER GROUND CONNECTION

Edmund G. Pankow, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsbugh, Pa.

Filed May 11, 1971, Ser. No. 142,306
Int. Cl. H01r 13/34
U.S. Cl. 339—14 R 4 Claims



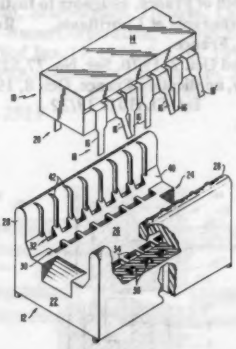
An electrical grounding arrangement for an oven liner in which a ground connection washer is provided having a tapering tab projecting generally perpendicular of the plane of the remainder of the washer and which is sized so that as the anchor bolt for the oven liner is pulled tight, the edges of the root of the tab are driven into interfering engagement with the hole in the range body back liner through which the anchor bolt projects, so that the edges of the tab break through oxides and enamel at the edge of the hole to provide positive ground contact.

3,693,131

PROGRAMMABLE DUAL-IN-LINE PIN CONNECTOR FOR INTEGRATED CIRCUIT UNITS

William G. Klehm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1971, Ser. No. 194,396
Int. Cl. H05r 1/16; H01r 23/02
U.S. Cl. 339—17 CF 12 Claims



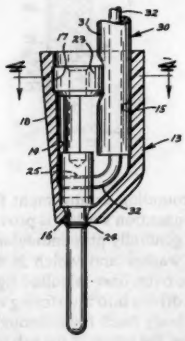
A dual-in-line electrical pin connector is so designed that when combined with an integrated circuit unit or package it is capable of modifying the connections performed by the leads of the latter. A body of electrically insulating material is provided with a channel so dimensioned as to substantially wholly receive an integrated circuit unit therewithin and is provided with two pairs of rows of correspondingly positioned lead receiving recesses which open into the channel and which are so distributed with respect to the channel that one pair of rows is adjacent to one side wall of the channel and the other pair of such rows is similarly adjacent to the other side wall of the channel. One row of each such pair of rows may have its

recesses fitted with an electrical contact while the other row may be devoid of such contacts and thereby enable each lead of the integrated unit received within the channel to have its leads selectively insertable into the correspondingly positioned recessed of one or the other of such pair of recess rows.

3,693,132
CONNECTOR

Jack L. Bowen, and James H. Ryan, both of Waseca, Minn., assignors to E. F. Johnson Company, Waseca, Minn.

Filed Feb. 8, 1971, Ser. No. 113,573
Int. Cl. H01r *31/02*
U.S. Cl. 339—47 R **11 Claims**

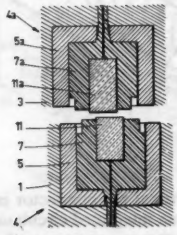


An electrical connector having a hollow dielectric body and a removable contact and conductor. The body is so dimensioned and shaped so as to removably receive and hold a contact and the end of a conductor so that when the contact is engaged within the body, the conductor is conductively, securely retained therein. Provisions are made for in-line stacking to allow multiple connections to a single terminal or jack.

3,693,133
FLUID TIGHT ELECTRIC CONNECTOR

Jacques Harbonn, Jouars Ponchartrain, and Jacques Garnier, Le Chesnay, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison Hauts de Seine, France

Filed Oct. 2, 1970, Ser. No. 77,522
Claims priority, application France, Oct. 8, 1969, 6934485
Int. Cl. H01r *13/22*
U.S. Cl. 339—48 **17 Claims**

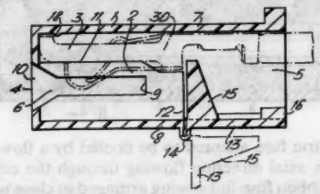


Tight electric connector formed of two connection members having each an insulating plug housed in a casing and projecting beyond the casing end surface, a stud embedded into said plug and projecting beyond the end surface of said plug, and an annular recess between said plug and said casing forming a space for the flow of the plug insulating material, occurring when the two connection members are pressed against each other.

3,693,134
ELECTRICAL CONNECTOR FOR A PRINTED CIRCUIT BOARD

Franco Trevisiol, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

Filed March 26, 1971, Ser. No. 128,292
Claims priority, application Italy, April 14, 1970, 23299 A/70
Int. Cl. H05k *1/07*; H01r *13/64*
U.S. Cl. 339—59 M **3 Claims**

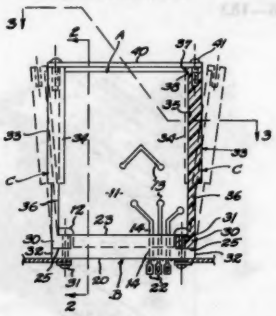


Contacts are normally secured in housings by resilient latches formed on the contacts or on the housings. The invention provides a housing with an integral hinged flap having a shoulder for engagement behind a contact in the housing. The flap is movable to withdraw the shoulder for release of the contact and is releasably engageable with the housing to secure the contact against withdrawal.

3,693,135
PRINTED CIRCUIT BOARD SOCKET AND HOLDING FRAME

James E. Vavrick, Mill Creek, Calif., and Fred Barthold, 2461 Oak St., Santa Monica, Calif.

Filed Dec. 21, 1970, Ser. No. 100,086
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **2 Claims**



A socket base for plug-in recption of multiple connector tails of a printed circuit board, is formed with holder arms extending in parallel spaced relation from respective sides of the base, to collectively provide a holding frame, the arms being of channel section to receive the respective ends of the board, and being connected to the base by narrowed flexible webs to provide a hinge action in which the arms may spring apart to receive and release the circuit board from their grasp.

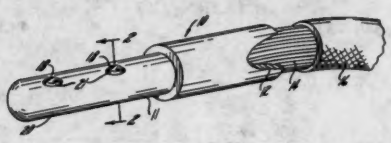
3,693,136
ELECTRICAL PLUG CONTACT

Arthur I. Appleton, 1713 W. Wellington Ave., Northbrook, Ill.

Continuation-in-part of Ser. No. 770,518, Oct. 25, 1968, abandoned. This application Feb. 9, 1970, Ser. No. 9,636
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 B **1 Claim**

Electrical plug connectors of the male type, which are adapted to be matingly inserted into a female portion, wherein

the male includes spring-biased, captive ball shaped members, preferably made of an insulating material such as a borosilicate glass for urging the male member against the corresponding arcuate contact surface of the female socket to

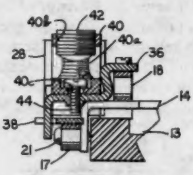


which it is inserted with a relatively even distributed pressure, so that a substantial area of current contacting interface results. The male portion includes two different radii of curvature, at least one forming an arcuate contact surface in cross-section which subtends an arc of less than 180°.

3,693,137
CONNECTOR KIT ATTACHABLE TO EXISTING NEUTRAL BAR ASSEMBLY

Walter T. Brumfield, Nicholasville, Ky., assignor to Square D Company, Park Ridge, Mich.

Filed March 18, 1971, Ser. No. 125,717
Int. Cl. H01r 9/00
U.S. Cl. 339—198 N **5 Claims**

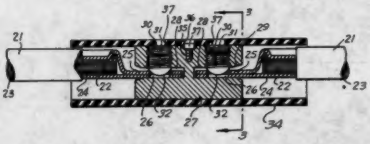


A connector kit attachable in the field to an existing neutral bar assembly to enable larger wires to be connected thereto than it was originally designed to accept.

3,693,138
ELECTRIC CABLE CONNECTOR

John R. Pertuit, Luling, La.

Filed Feb. 19, 1971, Ser. No. 116,761
Int. Cl. H01r 13/50
U.S. Cl. 339—213 R **1 Claim**

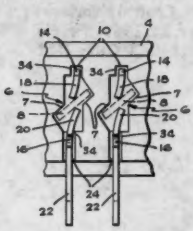


An electric cable connector which will accept cable ends of the type having a connector lug secured thereto. The connector lugs are clamped into a conducting body portion which is covered by a cylindrical insulating cover detachably secured thereon. In one form of the invention the body is solid and has opposed slots for receiving the lugs. In the other form of the invention the body is split and is forced together by rotating the insulator sleeve with respect to the body. In another form of the invention the body is split and is clamped together by a transverse bolt to clamp the lugs therebetween.

3,693,139
PIGGY BANK CONNECTOR

Fritjof Hans Assmus, and Heinz Knitter, both of Heilbronn, Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 28, 1970, Ser. No. 84,787
Int. Cl. H01r 9/08
U.S. Cl. 339—217 R **6 Claims**

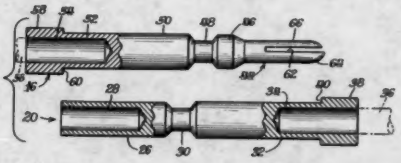


A connector of a type which receives a mating knife contact between the prongs of a forked contact member of the connector in such a manner that a twisting of the prongs of the connector exerts resilient electrical contact pressure upon the knife contact. The present invention achieves a more reliable electrical contact by the twisting action of the prongs of the receptacle upon insertion of the knife contact. The connector of the present invention comprises a body of insulating material having bearing surfaces which support a knife contact at an angle with respect to a pair of contact forks, such that upon insertion of the knife contact between the fork prongs a twisting of the prongs, rather than a spreading thereof, produces the contact engagement with the knife. The connector is designed such that it contains a forked receptacle at one end, a knife contact at the other, and a soldering lug protruding laterally thereof, all three portions of the contact member being of single-piece stamped construction. In a preferred embodiment of the invention, the knife portion of the connector is designed to matingly engage the receptacle portion of a like connector.

3,693,140
MINIATURE ELECTRICAL CONNECTOR CONTACTS

John P. Nijman, Scarborough, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 19, 1971, Ser. No. 107,651
Claims priority, application Canada, Jan. 20, 1970, 072,580
Int. Cl. H01r 13/06
U.S. Cl. 339—252 P **7 Claims**



A miniature connector in which the pin contact, or male contact member, has separate tines extending generally longitudinally but with their central portions bowed relatively laterally outwardly, their extended ends interengaging, and their outer surfaces curved in both directions; in one form, the tines may be of similar gauge and bowed similarly, while in another form the tines are of different gauge with the heavier one bowed and the lighter one relatively straight; each the male and female contact member has a rear section of generally thin wall but having an enlargement at the rear end to increase crimping effect on a conductor.

3,693,141

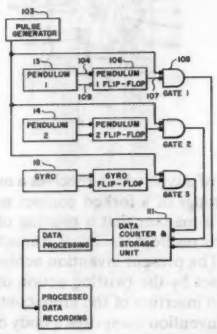
Patent Not Issued For This Number

3,693,142

BOREHOLE ORIENTATION TOOL

Jack W. Jones, 503 N. Central Expressway, Richardson, Tex.

Filed Nov. 21, 1969, Ser. No. 879,010
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 R **8 Claims**



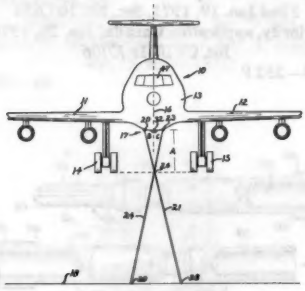
The particular embodiment described herein as illustrative of one form of the invention utilizes a device for detecting the angular position and directional orientation of a housing within a wellbore and for generating a signal indicative of such information for transmission to the earth's surface.

3,693,143

PROCESS AND APPARATUS FOR FACILITATING THE LANDING OF A VEHICLE ON A LANDING SURFACE

Francis V. Kennedy, 9007-B Bong Loop, Moses Lake, Wash.

Filed June 22, 1970, Ser. No. 48,284
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **4 Claims**



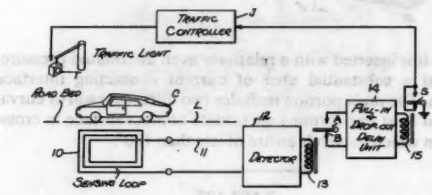
A process and apparatus for facilitating the landing of a vehicle such as an aircraft on a landing surface by projecting two radiation beams downward from the aircraft at fixed angles criss-crossing the beams below the aircraft coincident with the elevation of the landing gear and producing spots on the landing surface that move together in relation to the rate of descent of the aircraft. The spots come together when the landing gear touches down. Display means is provided to present representations of the spots before the pilot. Movement of the aircraft controls by the pilot to gently bring the spots together will then result in a smooth, safe and well-controlled landing.

3,693,144

PULL-IN AND DROP-OUT DELAY UNIT FOR VEHICLE DETECTOR IN TRAFFIC-CONTROL SYSTEM

Milton Friedman, Roslyn, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Oct. 21, 1970, Ser. No. 82,634
Int. Cl. G08g *1/07*
U.S. Cl. 340—37 **4 Claims**



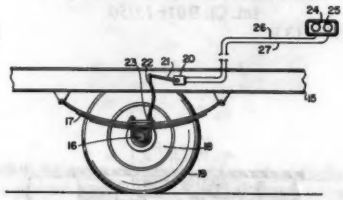
A pull-in and drop-out delay unit for a vehicle detector acting in conjunction with a traffic-light controller installed at a traffic intersection. The detector serves to sense the presence or absence of a vehicle in a zone adjacent the traffic intersection. When the detector senses the presence of a vehicle, the delay unit serves to defer the transfer of the presence signal to the traffic controller for an adjustable period to permit right-turn on "red." When the detector senses the absence of a vehicle, the delay unit defers the transfer of the absence signal to the controller for an adjustable period whereby "tailgating" is minimized and slow-reacting vehicles are more easily passed.

3,693,145

ANTI-CAPSIZING WARNING SYSTEM FOR VEHICLES

Lawrence A. Mize, 161 Minorca Way, Millbrae, Calif.

Filed July 23, 1970, Ser. No. 57,650
Int. Cl. H01h *35/02*
U.S. Cl. 340—52 R **9 Claims**



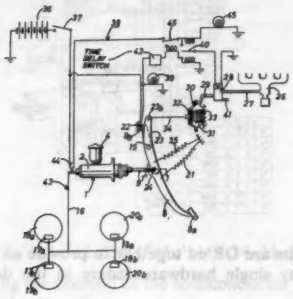
An anti-capsizing warning system for vehicles comprising a sending unit mounted to the frame of the vehicle adjacent an axle thereof for completing an electrical circuit to energize a warning device disposed near the operator of the vehicle in response to an increase in the spacing between the axle and the frame of the vehicle beyond a predetermined level. The sending unit may preferably comprise one or more lever actuated microswitches and a flexible member or cable interconnecting the actuating lever of the microswitches and the axle. A second sending unit may be placed at the other end of the axle, and may be wired in parallel with the first sending unit, so that the warning device will be suitably actuated in response to the tipping of the vehicle in either direction.

3,693,146

VEHICLE BRAKE FLUID PRESSURE MONITORING SYSTEM

Tsuneo Kawabe, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 30, 1970, Ser. No. 85,406
Claims priority, application Japan, Nov. 1, 1969, 44/87808
Int. Cl. B60q 1/00; G08b 21/00
U.S. Cl. 340—52 C 9 Claims



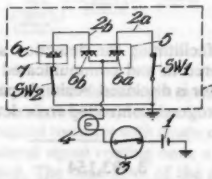
A braking fluid pressure sensing system capable of sensing and giving an alarm when damage or breakage occurs in the brake fluid pressure circuit during non-braking operation, comprising pressure means to operate the master cylinder regardless of operation of the brake pedal, and means for signaling an alarm when the value of the fluid pressure produced by the pressure means in the fluid pressure circuit falls below a predetermined value, thereby the driver of the vehicle may take precausions to prevent possible disastrous results due to the damage or breakage of the brake system.

3,693,147

DEVICE FOR DETECTING AND WARNING THE UNUSED STATE OF A VEHICLE SEAT BELT

Kiyokazu Seo, Toyota, and Yoshihiro Hayashi, Kasugai, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Wishikasugai-gun, Aichi Prefecture, Japan

Filed Jan. 20, 1971, Ser. No. 107,935
Claims priority, application Japan, Jan. 21, 1970, 45/6234
Int. Cl. B60q 1/00
U.S. Cl. 340—52 E 2 Claims



A device for detecting and warning the unused state of a vehicle seat belt, comprising a detecting circuit having seat switches adapted to be closed on sensing the occupation of the seats and belt switches adapted to be opened by drawing out a given length of seat belt to wear.

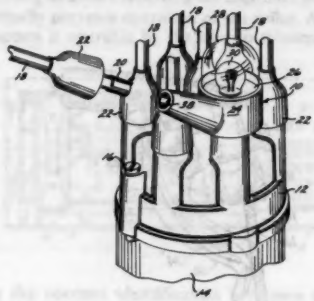
3,693,148

ENGINE TIMING LIGHT

James E. Pittman, 2761 Adriatic Ave., Long Beach, Calif.

Filed Feb. 11, 1971, Ser. No. 114,563
Int. Cl. F02p 17/00
U.S. Cl. 340—52 R 4 Claims

An engine timing light adapted to be detachably inserted in the distributor cap opening for a spark plug wire, and also adapted to detachably receive the spark plug wire which normally fits within the distributor cap opening. The timing light flashes on when the distributor points open, indicating when



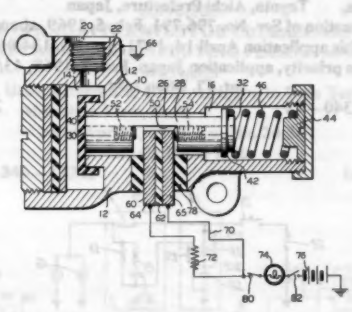
the spark plug would have been fired. The light enables setting of the time at which the points open in relation to travel of the associated piston, without having to open the distributor.

3,693,149

COMPREHENSIVE TIRE PRESSURE DIFFERENTIAL SENSING AND INDICATING DEVICE

Carey W. Johnston, 172 Reidyes Ave., Leonia, N.J.

Filed July 20, 1971, Ser. No. 164,366
Int. Cl. B60c 23/02
U.S. Cl. 340—58 8 Claims



An improved comprehensive tire pressure differential sensing device for furnishing selectively warnings for either excessive or insufficient normal tire pressure having in a housing a sliding piston positioned in a passageway, a spring urging said piston in a given axial direction, an air chamber formed in part by a diaphragm for receiving air under pressure urging the piston in an axial direction overcoming the force of the spring, a slot in the piston receiving a split contact pin, the pin having an insulation layer throughout its medial plane for forming two distinct electrical circuits, and circuit means for selectively indicating that an excess or inadequate pressure condition exists in a given tire.

3,693,150

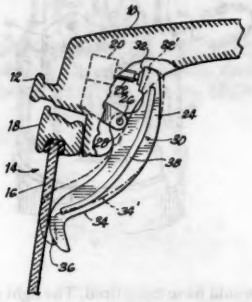
VEHICLE WINDOW ACTUATED ALARM DEVICE

Edward N. Daniels, 1961 Delaware St., Gary, Ind.

Filed June 3, 1971, Ser. No. 149,550
Int. Cl. B60r 25/10
U.S. Cl. 340—63 4 Claims

An alarm device for mounting on vehicles comprising a switch and a plunger biased away from the switch, and an arm having the configuration of a backward S with the arm being pivotally mounted adjacent to the window of the vehicle, and the upper portion of the arm operatively engaged with the plunger and a lower portion being in abutting relationship with

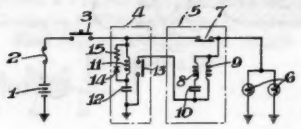
the window whereby the arm maintains the plunger in a depressed position when the window is closed and which is caused to pivot toward the window to release the plunger when the window is displaced from a closed position.



3,693,151
INITIALLY INTERMITTENTLY FLASHING BRAKE LAMP CIRCUIT

Tatsuo Hasegawa, Okazaki, and Ikuya Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan

Continuation of Ser. No. 796,791, Feb. 5, 1969, abandoned.
This application April 14, 1971, Ser. No. 134,061
Claims priority, application Japan, Feb. 7, 1968, 43/7634
Int. Cl. B60q 1/44
U.S. Cl. 340—72 2 Claims



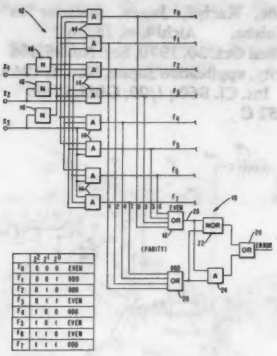
Brake lamp circuit in automobile or other vehicle comprises brake lamps and brake lamp switch operated by depressing brake pedal. Both are connected in series to power source. Time relay is connected between brake lamp switch and brake lamps, and flasher unit is connected between time relay and brake lamps. Time relay and flasher function to cause brake lamps to flash intermittently for a predetermined period of time after and while the brake pedal of vehicle is depressed.

3,693,152
ERROR DETECTION CIRCUIT FOR DECODERS

Se J. Hong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,877
Int. Cl. H03k 13/34
U.S. Cl. 340—146.1 AG 4 Claims

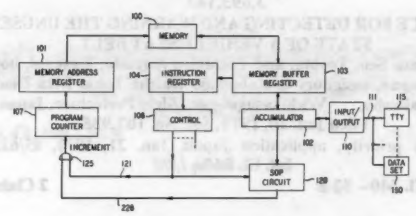
A decoder error detection circuit having a first and second OR circuit. The first OR circuit having as inputs thereto the half of the outputs from the decoder which represent binary numbers having the same parity. The inputs to the second OR circuit are obtained from the other half of the decoder outputs which represent binary numbers of the opposite parity of those in the first half. The output of the first and second OR circuits is connected to a logic circuit consisting of a NOR circuit and an AND circuit connected to each of said first and second OR circuits in parallel. The outputs of the NOR and AND circuits are OR'ed together to provide an error indication for any single hardware failure in the decoder being checked.



3,693,153
PARITY CHECK APPARATUS AND METHOD FOR MINICOMPUTERS

Peter Ernest Rosenfeld, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 9, 1971, Ser. No. 161,174
Int. Cl. G06f 11/10
U.S. Cl. 340—146.1 AG 6 Claims



Apparatus for facilitating the detection and correction of errors in data stored in and communicated to (and from) a small data processor is disclosed. A simple parity checking circuit facilitates a program-controlled error detection process.

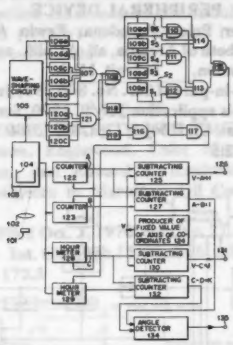
3,693,154
METHOD FOR DETECTING THE POSITION AND DIRECTION OF A FINE OBJECT

Moritada Kubo, and Yoshiaki Arimura, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 11, 1970, Ser. No. 97,390
Claims priority, application Japan, Dec. 15, 1969, 44/100421
Int. Cl. G06k 7/14
U.S. Cl. 340—146.3 H 10 Claims

A method for detecting the position of a semiconductor pellet which comprises the steps of affixing to the surface of the semiconductor pellet a position detecting pattern generating upon scanning pulses of prescribed width, interval and number, picking up the image of said pellet, scanning the pattern image with six scanning lines L_1 to L_6 to obtain signals L_1' to L_6' using a first group of delay circuits, treating said signals

in a logical circuit including a second group of delay circuits to obtain logical output expression as



$$(L_1'+L_2')\cdot(L_3'+L_4')\cdot(L_5'+L_6')+(L_1'\cdot L_2'\cdot L_3')=1$$

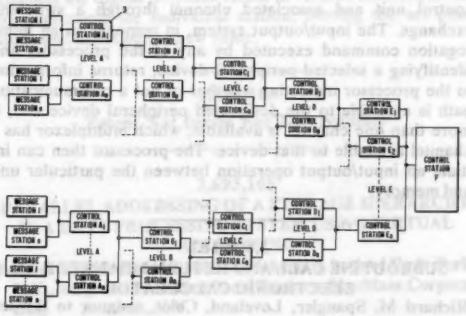
and calculating the position of the semiconductor pellet using said logical outputs.

3,693,155

COMMUNICATION SYSTEM

Paul A. Crafton, Potomac, Md., and Ingmar Mittmeyer, Falls Church, Va., assignors to National Telecommunications System, Inc., Oxon Hill, Md.

Filed March 23, 1971, Ser. No. 127,294
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R **20 Claims**



A communication system featuring a pyramid structured interconnecting network, adjacent levels of the interconnecting network being coupled together with single channel links. The system permits lateral signal routing once a common or linking level is reached. The base level of the pyramid structure contains message stations, with each higher level comprised of control stations. Each control station is controlled by the next higher level control station to which it is coupled while simultaneously controlling stations at the next lower level.

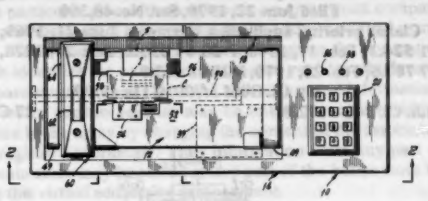
3,693,156

MEANS FOR INTERFACING AN EXISTING MANUAL IMPRINTER WITH A REMOTELY OPERATED, CREDIT CHECK CONTROL SYSTEM

John Di Lello, Warminster, Pa., assignor to Credit Systems, Inc., Colmar, Pa.

Filed May 11, 1970, Ser. No. 36,068
Int. Cl. G08b 5/00; H04q 9/00
U.S. Cl. 340—149 R **3 Claims**

A conventional manual imprinter, of the kind used to imprint sales slips with credit card information by manual operation of a printing roller, is linked to a remotely located computerized central memory in which credit information is stored. A supporting structure receiving the imprinter includes a latch that normally prevents operation of the roller. A keyboard on the structure is operable by the user to transmit to a central



memory the account identification as shown on the credit card. If the response from the central memory is affirmative the latch is tripped electrically and disengages the roller to allow manual operation thereof. If the response is negative, the latch remains engaged and imprinting of the sales slip is thus prevented.

3,693,157

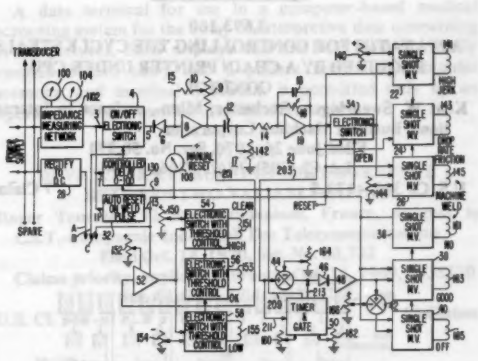
Patent Not Issued For This Number

3,693,158

METHOD AND APPARATUS FOR ULTRASONIC WELD QUALITY ANALYSIS EMPLOYING PLURAL ANALYSIS SIGNALS

Paul M. Uthe, Livermore, Calif., assignor to Uthe Technology, Inc., Mountain View, Calif.

Filed April 1, 1970, Ser. No. 24,547
Int. Cl. H04q 1/20
U.S. Cl. 340—172 R **16 Claims**

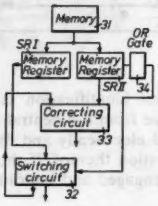


A method and apparatus for monitoring parameters indicating the quality of an ultrasonic weld process. A signal that is the function of the transducer and load impedance is first operated on by taking its logarithm. That signal is differentiated to provide a signal indicative of the smoothness of the machine movement; the negative portion of the machine signal is looked at during a selected time frame to detect the weld. The logarithm of the impedance signal is also integrated to provide a signal indicating the cleanness of the weld. The transducer voltage or current can also be monitored to assure that the desired amplitude is applied over an optimum time period.

3,693,159
DATA STORAGE SYSTEM WITH MEANS FOR ELIMINATING DEFECTIVE STORAGE LOCATIONS

Wolfgang Hilberg, Neu-Ulm, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed June 22, 1970, Ser. No. 48,300
Claims priority, application Germany, June 21, 1969, P 19 31 524.3; Feb. 17, 1970, P 20 07 050.2; Feb. 20, 1970, P 20 07 787.6; Feb. 25, 1970, P 20 08 663.9
Int. Cl. G06f *11/00*; G11c *19/00*
U.S. Cl. 340—172.5 27 Claims

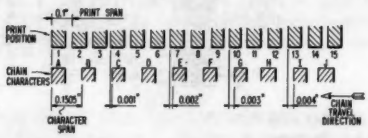


A data storage system containing an integrated memory for the storage of words of a given number of bits wherein the memory is constructed so that each word address in the memory is provided with a number of memory elements in excess of the given number of bits of the words to be stored and any unusable memory elements in the matrix are modified so that when interrogated they cause a distinctive signal to be produced. In response to these distinctive signals circuitry is provided for directing the data bits into those bit locations or columns of a word address containing only usable memory elements during the writing operation and for compacting or eliminating the gaps between the data bits as the result of unusable memory elements in certain bit locations of a word address during read out. A number of techniques for identifying the unusable memory elements upon interrogation, as well as additional features and schemes for improving the operation of such data systems are also disclosed.

3,693,160
APPARATUS FOR CONTROLLING THE CYCLE STEALS REQUIRED BY A CHAIN PRINTER UNDER CPU CONTROL

Kent W. Swearingen, Rochester, Minn., assignor to International Business Machines Corporation

Filed June 26, 1970, Ser. No. 50,271
Int. Cl. G05b *15/02*; G06c *11/06*
U.S. Cl. 340—172.5 7 Claims

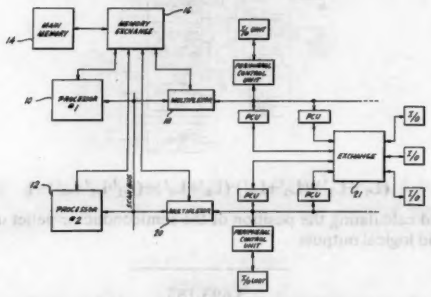


A printer attachment, which provides an interface between a CPU and a chain printer, contains a means which requests either one, two, or three cycle steals each time a character on the character chain is in line with an optioned print position, depending upon the correspondence between the chain character and the character to be printed. If the data to be contained in a print position is a blank, then only one cycle steal is required before another print position is optioned. After a character has been printed in a particular print position, only one cycle steal is then required each time that this print position is again optioned during the printing of a line.

3,693,161
APPARATUS FOR INTERROGATING THE AVAILABILITY OF A COMMUNICATION PATH TO A PERIPHERAL DEVICE

William Chandler Price, Pasadena; Erwin A. Hauck, and Jacob F. Vigil, both of Arcadia, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 846,393, July 9, 1969, abandoned. This application July 9, 1970, Ser. No. 53,441
Int. Cl. H04J *3/12*; G06f *13/00*
U.S. Cl. 340—172.5 5 Claims

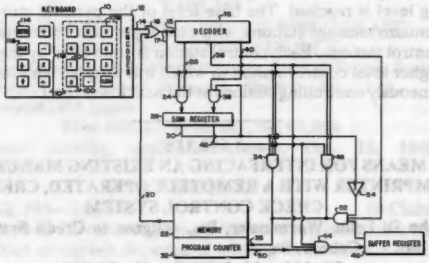


There is described a computer system in which one or more processors can interrogate, on command, the input/output system to determine whether communication paths are available to the respective peripheral units. The input/output system has one or more multiplexors which service a number of input/output channels, each channel having a peripheral control unit that controls one or more peripheral devices. Some peripheral devices are operated by more than one peripheral control unit and associated channel through a switching exchange. The input/output system, in response to an interrogation command executed by any of the processors and identifying a selected peripheral device, returns information to the processor indicating whether or not a communication path is available to the designated peripheral device and, if more than one channel is available, which multiplexor has a channel available to that device. The processor then can initiate an input/output operation between the particular unit and memory.

3,693,162
SUBROUTINE CALL AND RETURN MEANS FOR AN ELECTRONIC CALCULATOR

Richard M. Spangler, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,532
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 1 Claim



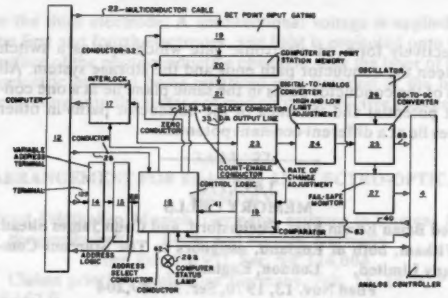
Two electronic calculator keys provide unconditional GO TO and subroutine call/return and return functions. A GO TO instruction followed by an alpha-numerical address causes the calculator to unconditionally branch to the address indicated.

The GO TO instruction followed by a SUB instruction and an alpha-numerical address causes the calculator to unconditionally branch to a subroutine at the address indicated, and the SUB instruction alone causes the calculator to unconditionally branch (return) to the address it was at when it branched to the subroutine.

3,693,163
COMPUTER SET POINT STATION

Irvin D. Johnson, Englewood, Colo; Mauro G. Togneri, Houston, Tex., and Eduard P. Kaufmann, Burghausen, Germany, assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 2, 1970, Ser. No. 77,510
Int. Cl. G05b *15/00*; G06f *3/00*
U.S. Cl. 340—172.5 **17 Claims**



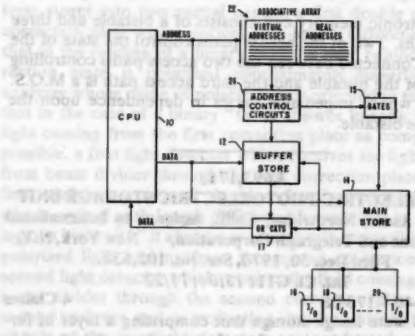
A device for interfacing a computer with an analog control system to control processes. The controlling computer changes the digital set point values in various control stations by addressing the individual station, zeroing the set point value and inserting the new value.

3,693,164
Patent Not Issued For This Number

3,693,165
PARALLEL ADDRESSING OF A STORAGE HIERARCHY IN A DATA PROCESSING SYSTEM USING VIRTUAL ADDRESSING

Forrest A. Reiley, and James T. Richcreek, both of Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,918
Int. Cl. G11c *9/00*; G06f *13/00*
U.S. Cl. 340—172.5 **20 Claims**

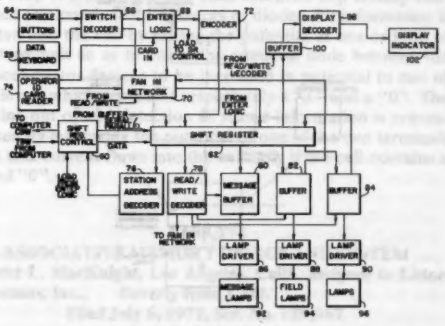


A data processing system includes a central processing unit which uses virtual addressing in address control words to access a high speed buffer store of limited storage capacity and simultaneously to access a high capacity main store of slower operating speed, whereby no time is lost in accessing the main store in the event the buffer store cannot be accessed. If the buffer store can be accessed, then a sector address register and a particular associative register in an array must compare with address control information in the address control word. Each sector address register has a link register the content of which identifies the particular associative register which must compare simultaneously with the address control information. Any sector address register may be linked to any associative register in the array by changing the content of the associated link register accordingly. Thus information from any part of the main store may be stored in any part of the buffer store by using this virtual addressing arrangement.

3,693,166
DATA INTERPRETATION TERMINAL

Edward B. Rawson, Lincoln, and John B. Dowling, Stow, both of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed Sept. 21, 1970, Ser. No. 73,954
Int. Cl. G06f *3/00*, *15/42*
U.S. Cl. 340—172.5 **8 Claims**

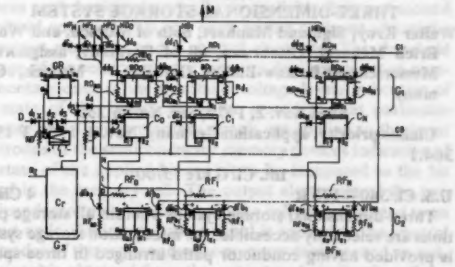


A data terminal for use in a computer-based medical screening system for the entry of interpretive data concerning X-ray pictures, ECG displays and the like. Data is visually verified before entry into a patient record in computer memory, and terminal operation is permitted only by an operator having a verified identification code.

3,693,167
DEVICE FOR EVALUATING THE DIFFERENCE BETWEEN TWO VARIABLE INPUTS

Roger Teurnier, 92 Rueil-Malmaison, France, assignor to C.I.T.-Compagnie Industriell Des Telecommunications

Filed Oct. 14, 1970, Ser. No. 80,722
Claims priority, application France, Oct. 14, 1969, 6935120
Int. Cl. G06f *3/04*; H03k *5/20*
U.S. Cl. 340—172.5 **12 Claims**



A device for evaluating the difference between two inputs. The first input is applied to a counter and the second is applied

to a memory device. A pulse generator then pulses the counter and a storage device until the count in the counter corresponds to the second input signal in the storage device. At this point the pulse generator is stopped. The count in the storage is therefore indicative of the difference between the first and second inputs since it received a pulse for each pulse required to raise the value of the input of the counter to the value of the input of the memory device.

3,693,168

MACHINE FOR PRODUCING SQUARED-OFF PLOTS FOR USE IN PROGRAMMING KNITTING AND OTHER TEXTILE MACHINES

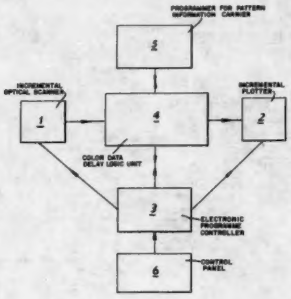
Harold Lees Halkyard, Bushby; Herbert Brian Bliss-Hill, Evington, and Eric William Tewsley, Kirby Muxloe, all of England, assignors to Stibbe Machinery Limited, Leicester, England

Filed Nov. 2, 1970, Ser. No. 86,081

Claims priority, application Great Britain, Nov. 8, 1969, 54785/69

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **15 Claims**



Machine producing squared-off plots has an incremental scanner to scan an artist's picture of a design and to produce signals appropriate to each point scanned, an incremental plotter, and a program controller to program movements of scanner and plotter. Plotter has pens each for marking on a plot a bit of information appropriate to one of the signals. The scanner incorporates tone or color differentiating means. The program controller includes sequence timing means to move scanner at predetermined intervals of time; control means for controlling movements of plotter; means for selecting a pen corresponding to a point scanned by the scanner thereby to position the pen in the appropriate position relatively to plot; and feed back means to halt scanner while a pen is being selected and operated.

3,693,169

THREE-DIMENSIONAL STORAGE SYSTEM

Walter Kroy; Sigmund Manhart, both of Munich, and Walter Erich Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

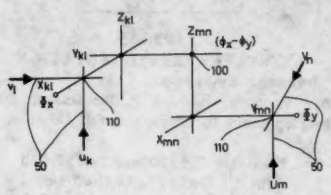
Filed Nov. 2, 1970, Ser. No. 86,230

Claims priority, application Germany, Nov. 4, 1969, P 19 55 364.1

Int. Cl. G11c *13/00*

U.S. Cl. 340—173 R **4 Claims**

Three-dimensional storage system wherein all storage positions are selectably accessible. An information storage system is provided having conductor paths arranged in three spatial directions. The electrically conductive junctions formed at each intersection of three mutually perpendicular conductor paths provide the respective storage positions. All conductor path systems which terminate in a common column at one exterior surface of the system and all conductor paths terminating in a common row each have a single common selecting line and two of these mutually perpendicular selecting lines



respectively form an electronic gate which acts as a switch between the conductor path ends and the storage system. All ends of the conductor paths in the same plane lie at a one constant potential and the ends of the conductor paths in other planes lie at a different constant potential.

3,693,170

MEMORY CELLS

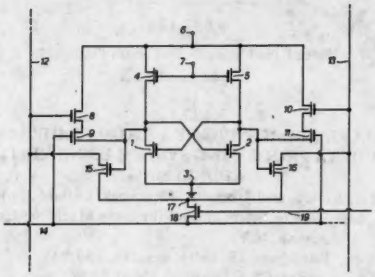
Alfred Brian Edwin Ellis, Chelmsford, and Colin James Shead, Witham, both of England, assignors to The Marconi Company Limited, London, England

Filed Nov. 13, 1970, Ser. No. 89,204

Claims priority, application Great Britain, Aug. 5, 1970, 37,782/70

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 FF **10 Claims**



An electronic memory cell consists of a bistable and three access paths. Two of the access paths control the state of the bistable. Connected between the two access paths controlling the state of the bistable and the third access path is a M.O.S. transistor whose impedance varies in dependence upon the state of the bistable.

3,693,171

FERROELECTRIC-PHOTOELECTRIC STORAGE UNIT

Adolf R. Asam, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

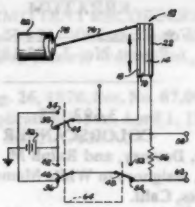
Filed Dec. 30, 1970, Ser. No. 102,638

Int. Cl. G11c *13/04*, *11/22*

U.S. Cl. 340—173 LS **4 Claims**

A solid state image storage unit comprising a layer of ferroelectric material having a first electrode formed on one side of the layer and second electrode formed on the other side of said layer. A photoconductive array is formed of a plurality of

channels having a coating of photoconductive material, one end of the channels having a first conductive coating thereon defining a third electrode and the other end of the channels having a conductive coating thereon defining a fourth electrode with the second electrode being conductively connected

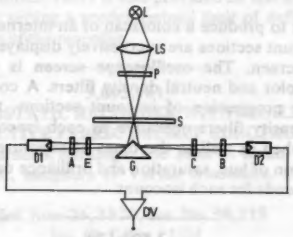


to the third electrode. A unidirectional voltage is applied to the first and fourth electrodes, and light is projected onto the surface of the photoconductive channels, with the layer of ferroelectric material being polarized as a function of the light projecting onto the surface of said photoconductive channels.

3,693,172
ARRANGEMENT FOR READING AN ELECTRO-OPTICAL MEMORY

Ernst Feldtkeller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 9, 1971, Ser. No. 114,004
Claims priority, application Germany, Feb. 11, 1970, P 20 06 167.0
Int. Cl. G11c *11/22*, *11/42*
U.S. Cl. 340—173 LS **8 Claims**

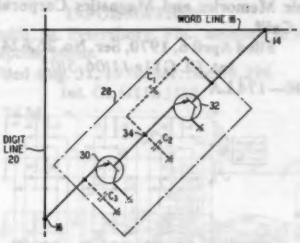


Arrangement for reading an electro-optical memory, in which for the storage of information there is employed the double refraction characteristic dependent on the material state of a storage material and in which for reading linearly polarized light is conducted through the storage material, comprising a beam divider which subdivides the light coming from storer into two partial beams, a first double refracting correction plate whose optical path-length difference is such that in the reading of a binary "O" the light behind the correction plate is polarized approximately linearly, a first analyzer whose plane of polarization is oriented in such a way that in the case of a binary "O" it absorbs linearly polarized light coming from the first correction plate as completely as possible, a first light detector which receives the light coming from beam divider through the first correction plate and the first analyzer, a second double-refracting correction plate whose optical path-length difference is such that in the reading of a binary "1" it absorbs as completely as possible linearly polarized light coming from the second correction plate, a second light detector which receives the light coming from the beam divider through the second correction plate and the second analyzer, and an evaluating circuit to which the output signals of the two light detectors are conducted and which further processes the sign of the difference of the output signals.

3,693,173
TWO-TERMINAL DUAL PNP TRANSISTOR SEMICONDUCTOR MEMORY

John Donnell Heightley, Basking Ridge, and Sigurd Gunther Waaben, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1971, Ser. No. 156,339
Int. Cl. G11c *11/36*
U.S. Cl. 340—173 R **8 Claims**

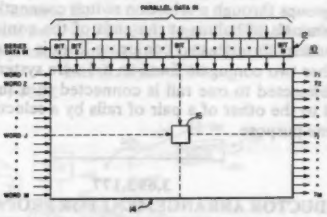


A semiconductor memory contains memory cells that each have only two terminals and each comprise two serially connected semiconductor transistors or diodes. Bit information is written into the cell by raising the potential of one or both of the terminals so as to cause the common node between the semiconductor devices to be increased in potential to one of two levels which represent respectively a "1" and a "0". The reading out of and detection of stored information is accomplished by increasing the potential of one of the two terminals such that current flows into the cell only if the cell contains a stored "0".

3,693,174
ASSOCIATIVE MEMORY DEVICE AND SYSTEM

Merritt L. MacKnight, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed July 6, 1971, Ser. No. 159,867
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 AM **24 Claims**



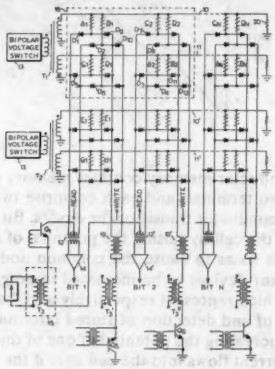
An associative memory is disclosed which includes a memory cell having first and second semiconductor memory devices each having electrically controllable first and second threshold voltage levels and each having an input electrode, an output electrode and a control electrode. The threshold voltage of the semiconductor memory devices are set to complementary ones of the threshold voltage levels indicative of the state of the binary bit to be stored in that particular memory cell. Complementary signals are applied to the input electrodes of the semiconductor memory devices indicative of the state of the applied binary bit to be compared to the bit stored in the memory cell. The output electrodes of the two semiconductor memory devices in the cell are connected to an output node. An interrogation signal is applied to the control electrodes of the semiconductor memory devices, and an output signal is obtained from the output node indicative of the correlation of the stored bit and the applied bit at the time of the application of the interrogation signal.

3,693,175
Patent Not Issued For This Number

3,693,176
READ AND WRITE SYSTEMS FOR 2 1/2D CORE MEMORY

Bernard A. Kenner, Palos Verdes Peninsula, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed April 6, 1970, Ser. No. 25,624
Int. Cl. G11c *11/06, 5/02*
U.S. Cl. 340—174 LA **15 Claims**

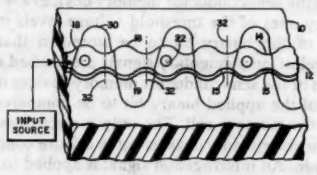


An organization is disclosed for driving bit lines of 2-wire or 3-wire, 2 1/2D coincident current core memory systems using paired rails for a plurality of bit drive lines, and a separate transformer to energize each pair of rails with opposite polarities for each read or write operation. In a 2-wire system, two conjugate lines connected to one rail of a pair and associated with a given bit position of separate word groups are connected to two conjugate lines connected to the other rail of a pair and associated with an adjacent bit position of the same word groups through a selection switch connecting single output terminals of baluns at the ends of the conjugate lines so that current through two conjugate lines is returned through the other two conjugate lines. In a 3-wire system, a single bit line connected to one rail is connected to a single line connected to the other of a pair of rails by a selection switch for the same purpose.

3,693,177
CONDUCTOR ARRANGEMENT FOR PROPAGATION IN MAGNETIC BUBBLE DOMAIN SYSTEMS

John M. Owens, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed March 12, 1971, Ser. No. 123,639
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **5 Claims**



A conductor arrangement for the propagation of single wall domains in a magnetic bubble domain system is disclosed. An elongated conductor on a restricted portion of a strip of film of a magnetic bubble domain material provides a field gradient which causes the magnetic bubble domain to be moved from a nonrestricted portion through the restricted portion to a second nonrestricted portion of the strip.

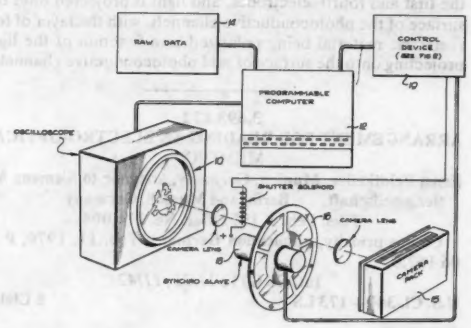
ERRATUM

For Class 340—174 R see:
Patent No. 3,693,188

3,693,178
COLORSCANNER

Ernest J. Braun, Downey, and Ralph M. Adams, San Gabriel, both of Calif., assignors to White Memorial Medical Center, Los Angeles, Calif.

Filed April 29, 1970, Ser. No. 32,854
Int. Cl. G01d *9/42*; A61b *6/00*
U.S. Cl. 346—1 **12 Claims**

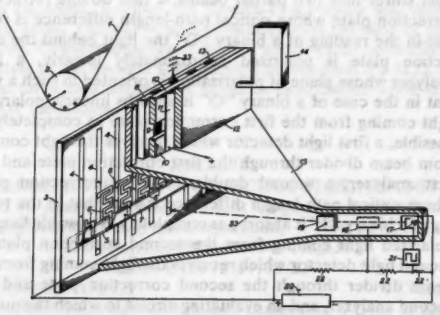


In order to produce a colorscan of an internal organ or the like, isocount sections are successively displayed on an oscilloscope screen. The oscilloscope screen is photographed through color and neutral density filters. A computer determines the progression of isocount sections, the color and neutral density filters operative as each isocount display is photographed as well as the times of exposure thereof. Any combination of hue, saturation and brilliance can be provided as a color code for each isocount.

3,693,179
PRINTING BY SELECTIVE INK EJECTION FROM CAPILLARIES

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill.

Continuation-in-part of Ser. No. 801,647, Feb. 24, 1969, Pat. No. 3,582,954. This application Sept. 3, 1970, Ser. No. 69,248
Int. Cl. G01d *15/16*
U.S. Cl. 346—1 **2 Claims**



A printing method and apparatus in which a plurality of capillaries eject ink selectively. Ink is moved to the capillary

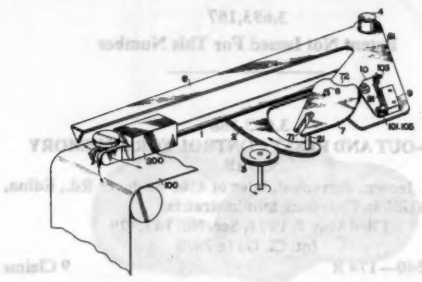
surface and is further acted upon by a force external to the capillaries, the combination of forces being sufficient to remove ink from said capillary and to deposit it upon an ink receiving surface.

3,693,180

INTERMITTENT RECORDERS

Takefumi Hasebe, and Kazuo Yamada, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Musashino City, Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,002
Claims priority, application Japan, April 1, 1970, 45/31215
Int. Cl. G01d 9/34
U.S. Cl. 346—17 **7 Claims**



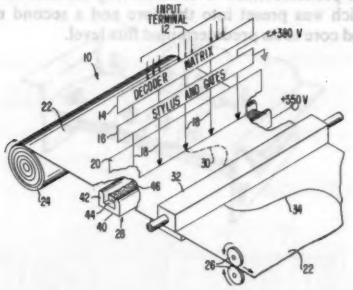
In an intermittent recorder for recording a plurality of measured quantities by dots of different colors, there is provided an ink holder containing a plurality of pens supplied with inks of different colors and a Geneva gear mechanism for intermittently transferring the pens in accordance with the type of measured quantities. There is also provided an alarm point set mechanism for setting a predetermined limit of deflection of the pointer arm of the recorder.

3,693,181

ELECTROSTATIC RECORDER WITH RESILIENT CONDUCTIVE FABRIC BACKUP ELECTRODE

Edward W. Marshall, Saratoga, and John D. Sloan, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 26, 1970, Ser. No. 50,215
Int. Cl. G03g 15/04
U.S. Cl. 346—74 ES **6 Claims**



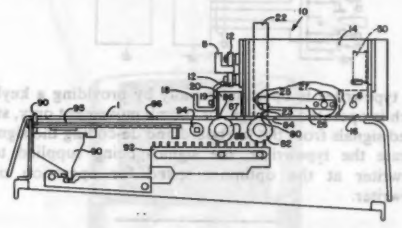
A matted nylon pile fuzz fabric is provided on a support plate for retaining the recording web in electrical engagement with the styli writing electrodes on a recording head. The fuzz fabric is conductive and functions as a backup electrode. The resilient nature of the fabric pile insures good mechanical and electrical contact with the recording web. The support plate and conductive fabric are located directly adjacent to the styli electrodes to minimize the portion of the recording web included in the charging path between each styli electrode and the backup electrode. The fuzz fabric is impregnated with silver and has a volume conductance of approximately one ohm centimeters. In another embodiment a silver impregnated nylon woven fabric was employed as the backup electrode. A soft sponge backing pad was placed behind the woven fabric to provide resilience. The sponge pad may also be employed with the fuzz fabric to provide increased resilience.

3,693,182

CARD RECORDER FOR TRANSCRIBING MAGNETIC INFORMATION

Kenneth B. Smith, St. Petersburg, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1970, Ser. No. 68,296
Int. Cl. G11b 5/86
U.S. Cl. 346—74 M **4 Claims**



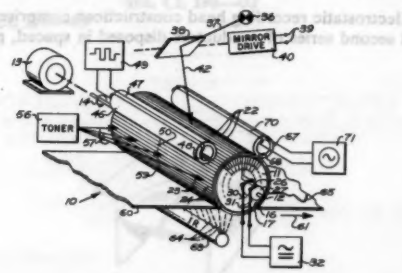
A recording apparatus transcribes data from an information carrier, which is coded with variations in soft magnetic material, to magnetic tape. A carriage, supporting a asset of magnetic tape and a permanent magnet which is positioned near a portion of tape, passes over the information carrier locating the permanent magnet and a section of tape adjacent the magnetic coding. As the tape is transported within the cassette during the pass of the carriage, the data coded on the carrier is recorded on the magnetic tape.

3,693,183

MAGNETIC PRINTING UTILIZING THERMAL GRADIENTS

James U. Lemke, Del Mar, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 757,063, Sept. 3, 1968, abandoned. This application July 19, 1971, Ser. No. 164,110
Int. Cl. H01v 3/04
U.S. Cl. 346—74 MT **9 Claims**



Apparatus for producing optically and magnetically discernible prints of information has an endless magnetic recording medium for providing an erasable magnetic record of the information in response to thermal gradients and an endless transducer medium for providing electrical gradients representative of the information. An electrical energy supply enables the electrical gradients to provide thermal gradients producing the erasable magnetic record. This magnetic record is printed out with a magnetic toning agent and is thereafter erased.

3,693,184

DATA PROCESSING EQUIPMENT INCLUDING IMPROVED KEYBOARD

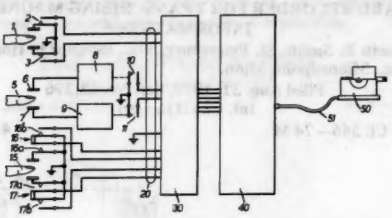
Reginald G. Maling, 63 Mandeville Road, Aylesbury, England

Filed Oct. 1, 1969, Ser. No. 862,780

Claims priority, application Great Britain, Oct. 4, 1968, 47,270/68

Int. Cl. G11b *5/02*

U.S. Cl. 346—74 M **9 Claims**



A typewriter is operated rapidly by providing a keyboard which is operated by finger or thumb movement only, storing coded signals from the keyboard and de-coding the signals to operate the typewriter, the signals being supplied to the typewriter at the optimum speed for operation of the typewriter.

3,693,185

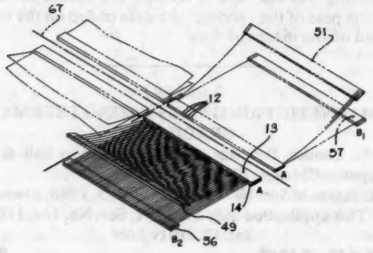
ELECTROSTATIC RECORDING HEAD

William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.

Filed Oct. 15, 1970, Ser. No. 81,073

Int. Cl. G01d *15/06*

U.S. Cl. 346—139 C **1 Claim**



Electrostatic recording head constructions comprise a first and second series of conductors disposed in spaced, parallel relation and having a pair of elongated, insulative head members secured together in confronting relation sandwiching one end of each of the conductors therebetween. The tips of the conductor ends are exposed in a line lying substantially in a plane between said members. Finally, first and second elongated handling elements are readily releasably secured respectively to the other ends of the first and second series of conductors.

3,693,186

Patent Not Issued For This Number

3,693,187

Patent Not Issued For This Number

3,693,188

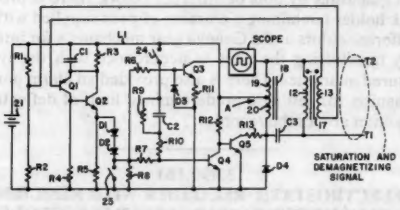
READ-OUT AND RESET CONTROL FOR A MEMORY CORE

James L. Jensen, decreased, later of 4505 Andover Rd., Edina, Minn. (Gillian C. Jensen, administratrix)

Filed May 7, 1971, Ser. No. 141,329

Int. Cl. G11c *7/00*

U.S. Cl. 340—174 R **9 Claims**



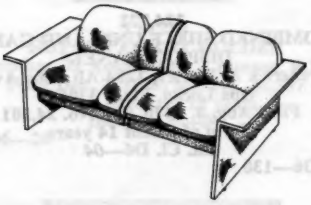
A flux to period generator for reading out a preset predetermined flux level stored in a core and for resetting said core to said predetermined flux level embodying a first means to determine the length of time necessary to saturate said core from the predetermined level to thereby indicate the level of flux which was preset into the core and a second means to reset said core to its predetermined flux level.

DESIGNS

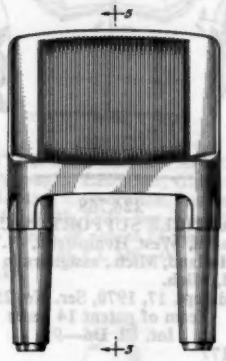
SEPTEMBER 19, 1972

224,763
SANDAL FOR CHILDREN
Tatsuo Fukuoka, 3, 3-ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Filed Jan. 28, 1971, Ser. No. 110,800
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—283

224,764
COUCH OR SIMILAR ARTICLE
David L. Rowland, 49 W. 55th St., New York, N.Y. 10019
Filed Dec. 30, 1969, Ser. No. 20,710
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—63

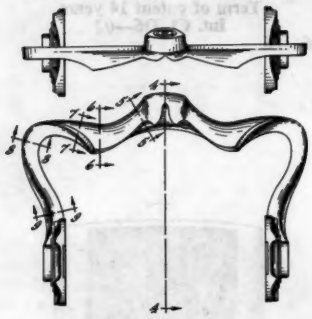


224,765
CHAIR
James P. Manning, Deerfield, Ill., assignor to Republic Molding Corporation, Niles, Ill.
Filed Oct. 12, 1970, Ser. No. 25,460
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

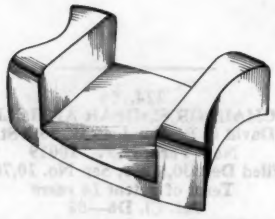


224,766
CHAIR OR SIMILAR ARTICLE
David L. Rowland, 49 W. 55th St., New York, N.Y. 10019
Filed Dec. 30, 1969, Ser. No. 20,709
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69

224,767
TISSUE HOLDER
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,116
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

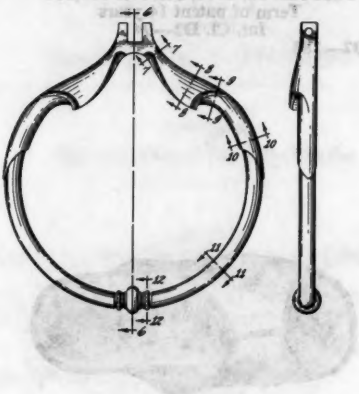


224,768
ARTICLE SUPPORT RACK
Donald Watamura, West Hempstead, N.Y., and Everett L. Duester, Holland, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Sept. 17, 1970, Ser. No. 25,041
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—177

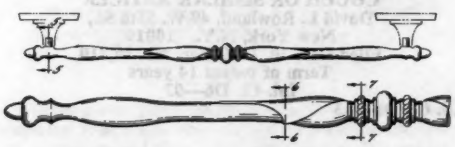


224,769
COMBINED COUNTER AND CABINET UNIT
Daniel E. Richardson, Bel-Ridge, Mo., assignor to Shure Manufacturing Corporation, St. Louis, Mo.
Filed July 9, 1970, Ser. No. 23,871
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159

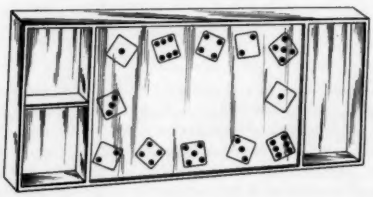
224,770
TOWEL RING
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,110
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—32



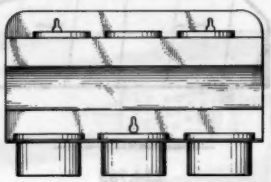
224,771
TOWEL BAR
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,126
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



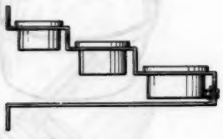
224,772
COMBINED SHELF UNIT AND GAME DISPLAY PANEL
Frederick A. Hurley, 1204 Ali Baba Ave., Opa Locka, Fla. 33054
Filed Aug. 4, 1970, Ser. No. 24,301
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



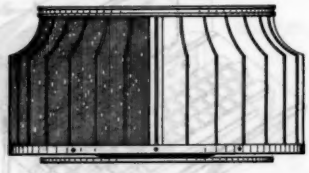
224,773
WALL RACK FOR NAILS OR THE LIKE
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801
Filed Feb. 1, 1971, Ser. No. 111,786
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—130



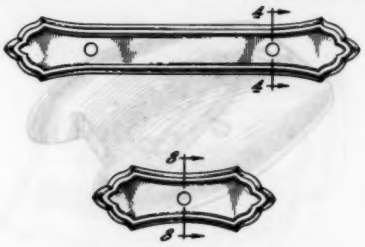
224,774
WALL RACK FOR NAILS OR THE LIKE
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801
Filed Feb. 2, 1971, Ser. No. 112,102
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—130



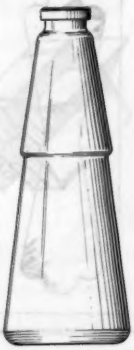
224,775
ROTARY CHART HOLDER
Karl B. Brother, 32 Arnold Ave., Cranston, R.I. 02905
Filed Dec. 7, 1970, Ser. No. 26,307
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20



224,776
ESCUTCHEON
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 7, 1970, Ser. No. 26,331
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

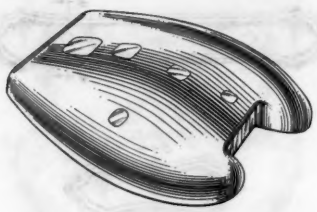


224,777
BOTTLE OR SIMILAR ARTICLE
Floyd E. Pettengill, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Oct. 29, 1970, Ser. No. 25,718
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—119

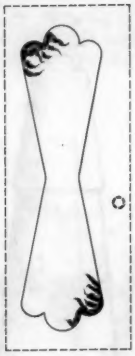


224,778
COVERED CONTAINER FOR FOOD OR THE LIKE
Alfred J. Cocci, 120 Colburn St., Leominster, Mass. 01453
Filed Sept. 28, 1970, Ser. No. 25,233
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

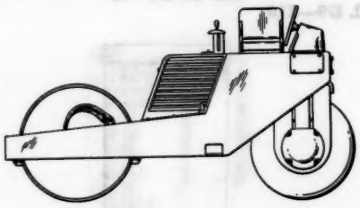
224,779
DWELLING
Curt H. Grob, Jr., 974 Pines Terrace, Franklin Lakes, N.J. 07417
Filed Oct. 29, 1970, Ser. No. 25,720
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



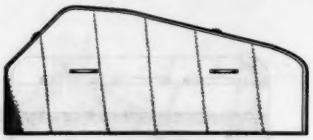
224,780
DOOR COVERING
Mary J. Schildknecht, 6202 Upper Hunter Trace Road, Jefferson, Ky. 40216
Filed Feb. 2, 1971, Ser. No. 112,103
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



224,781
SELF-PROPELLED VIBRATORY COMPACTOR
George D. Herbst, Milwaukie, Oreg., assignor to Hyster Company, Portland, Oreg.
Filed Nov. 19, 1971, Ser. No. 200,666
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3

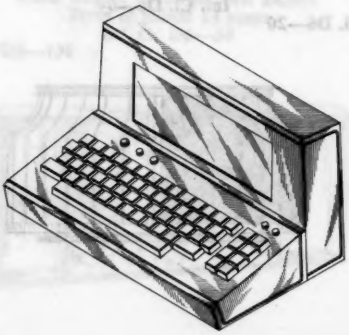


224,782
RIGID MOLDED COVER FOR A SNOWMOBILE
Donald D. Kerr, P.O. Box 338, Hartland, Wis. 53029
Filed Feb. 3, 1971, Ser. No. 112,514
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27

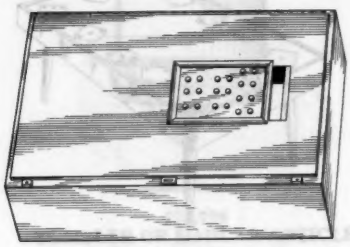


224,783
AIR FRESHENER CONTAINER
David A. Jones, Bellbrook, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Oct. 27, 1971, Ser. No. 193,233
Term of patent 7 years
Int. Cl. D23—*99;* D7—*07;* D9—*01*
U.S. Cl. D23—150

224,784
COMBINED SELF-SCAN DISPLAY AND KEYBOARD CONTROLS
Jay Sucre, Exton, Pa., and William A. Hoffman, Collingswood, N.J., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 25,125
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,785
ELECTRONIC CONTROL CABINET
George J. Dean, Jr., Arvada, Colo., assignor to Wadsworth Control Systems, Inc., Arvada, Colo.
Filed Oct. 2, 1970, Ser. No. 25,305
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



224,786
ELECTRIC CABLE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Feb. 3, 1971, Ser. No. 112,498
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

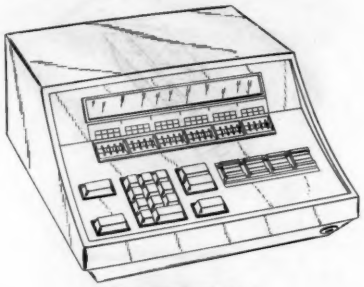
224,787
ELECTRIC CABLE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Feb. 3, 1971, Ser. No. 112,499
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

224,788
ELECTRIC CABLE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Feb. 3, 1971, Ser. No. 112,500
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

224,789
ELECTRIC CABLE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Feb. 3, 1971, Ser. No. 112,501
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

224,790
ELECTRIC CABLE
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309
Filed Feb. 3, 1971, Ser. No. 112,502
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

224,791
KEYBOARD FOR A MICROFILM RETRIEVAL SYSTEM OR THE LIKE
Frederick G. Knowles, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 28, 1971, Ser. No. 167,077
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



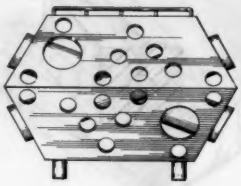
224,792
ANIMAL BED
William C. Knox, Jr., Seattle, Wash., assignor to Kenneth R. Jacobson, Seattle, Wash.
Filed Jan. 26, 1971, Ser. No. 109,994
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41

224,793
CALKED HORSESHOE
Norman C. Jeckel, P.O. Box ZZ, Steamboat Springs, Colo. 80477
Filed Feb. 11, 1971, Ser. No. 114,747
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35

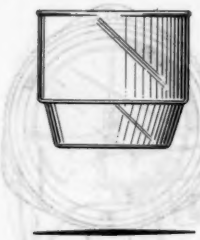
224,794
DICE TABLE
Frederick A. Hurley, 1204 Ali Baba Ave., Opa Locka, Fla. 33054
Filed Aug. 4, 1970, Ser. No. 24,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

224,795
SPARKLER TOY
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Jan. 8, 1971, Ser. No. 105,145
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

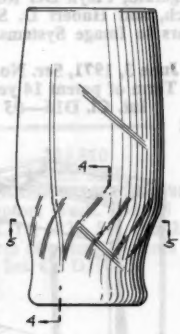
224,796
PLAYGROUND CLIMBER OR THE LIKE
John F. Price, Delafield, and Larry L. Johnson, Milwaukee, Wis., assignors to Everwear Park & Playground Equipment, Inc., Oconomowoc, Wis.
Filed Mar. 3, 1971, Ser. No. 120,798
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



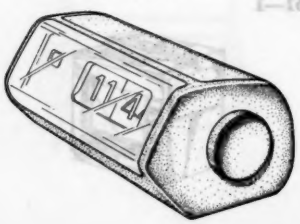
224,797
TUMBLER OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 21, 1971, Ser. No. 136,300
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8



224,798
TUMBLER OR SIMILAR ARTICLE
Frank J. Benes, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 21, 1971, Ser. No. 136,306
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8

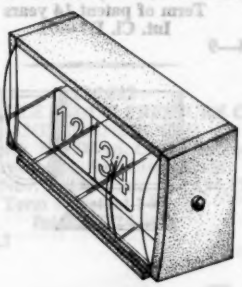


224,799
CLOCK
Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Jan. 5, 1971, Ser. No. 104,186
Claims priority, application Japan July 13, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



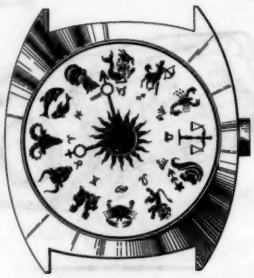
224,800
CLOCK
Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Jan. 5, 1971, Ser. No. 104,188
Claims priority, application Japan July 13, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

224,801
CLOCK
Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Jan. 5, 1971, Ser. No. 104,190
Claims priority, application Japan July 15, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

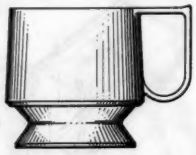


224,802
CLOCK
Jack Gabel Conner, 6013 Tulip Hill Road, Worthington, Ohio 43085
Filed May 5, 1971, Ser. No. 140,635
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

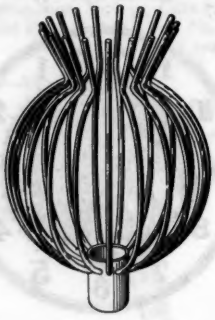
224,803
WRISTWATCH
Charles P. Knauft, 13824 Oxnard St., Van Nuys, Calif. 91406
Filed Apr. 22, 1971, Ser. No. 136,646
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



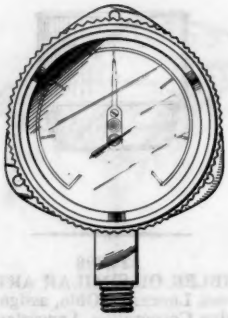
224,804
CUP HOLDER
William Harvey Dennerlein, Plainview, and John Duncan Wark, Freeport, N.Y., assignors to American Can Company, Greenwich, Conn.
Filed Feb. 9, 1971, Ser. No. 114,106
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9



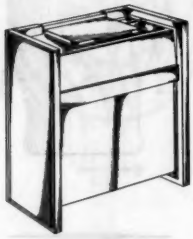
224,805
HEAD FOR A TIKI TORCH
James D. Reese, 11937 Avenue 274, Visalia, Calif. 93277
Filed Apr. 28, 1971, Ser. No. 138,399
Term of patent 14 years
Int. Cl. D26—*02, 05*
U.S. Cl. D48—24



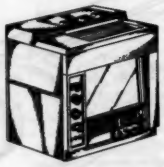
224,806
PRESSURE GAUGE
Earl Donald Zuck, Quakertown, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed Feb. 18, 1971, Ser. No. 116,738
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



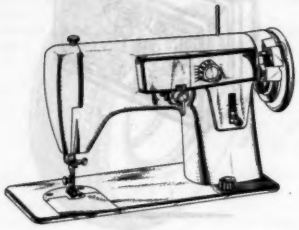
224,807
FILM DUPLICATOR
Timothy P. Fitzgerald, Playa Del Rey, William O. Nix, Newport Beach, and Hubert D. Sandeffer, Anaheim, Calif., assignors to Image Systems, Inc., Culver City, Calif.
Filed June 3, 1971, Ser. No. 149,890
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



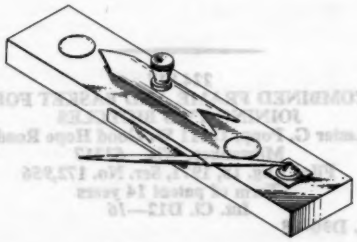
224,808
FILM READER/PRINTER
Timothy P. Fitzgerald, Playa Del Rey, Calif., assignor to Image Systems, Inc., Culver City, Calif.
Filed June 15, 1971, Ser. No. 153,482
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



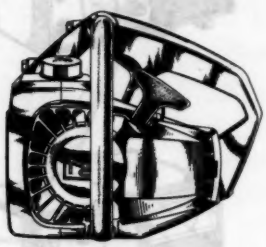
224,809
SEWING MACHINE OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., assignor to The Singer Company, New York, N.Y.
Filed June 29, 1971, Ser. No. 158,149
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



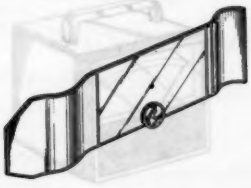
224,810
DESK SET
John N. Millner, 11625 SE. 88th St., Renton, Wash. 98055
Filed Oct. 19, 1970, Ser. No. 25,544
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—5



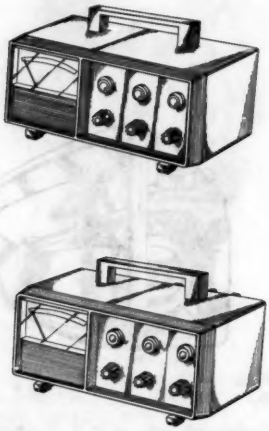
224,811
INTERNAL COMBUSTION ENGINE CASING
Wilford B. Burkett, Pacific Palisades, Anthony J. Carsello, Rolling Hills, and Harry I. Hazzard, Culver City, Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
Filed Aug. 10, 1970, Ser. No. 24,392
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



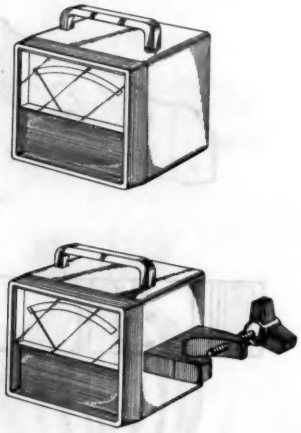
224,812
DISPOSABLE BLOOD PRESSURE CUFF AND TRANSDUCER
Sydney Hudspith, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 1, 1971, Ser. No. 194,776
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



224,813
OXYGEN MONITOR
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 1, 1971, Ser. No. 194,785
Term of patent 14 years
Int. Cl. D24—*01;* D10—*04*
U.S. Cl. D83—1

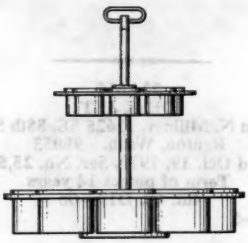


224,814
OXYGEN MONITOR
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 1, 1971, Ser. No. 194,786
Term of patent 14 years
Int. Cl. D24—*01;* D10—*04*
U.S. Cl. D83—1



224,815
SEWING MACHINE CARRYING CASE
Teiichi Nishigami, Osaka, Japan, and Charles A. Harrison, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Jan. 25, 1971, Ser. No. 109,723
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1

224,816
TOTE RACK FOR NAILS OR THE LIKE
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801
Filed Feb. 1, 1971, Ser. No. 111,784
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



224,817
COMBINED FRAME AND BASKET FOR JOINING TWO BICYCLES
Lester G. Popp, 12111 W. Good Hope Road, Milwaukee, Wis. 53217
Filed Aug. 18, 1971, Ser. No. 172,956
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—8

224,818
VEHICLE TIRE
Shiro Takahashi, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed July 23, 1971, Ser. No. 165,887
Claims priority, application Japan Feb. 2, 1971
Term of patent 7 years
Int. Cl. D12—*15*
U.S. Cl. D90—20

224,819
REAR AXLE KICK STAND
Robert F. Humlong, 46 Bryant Circle, Maysville, Ky. 41056
Continuation-in-part of design application Ser. No. 20,046, Nov. 12, 1969. This application Sept. 10, 1970, Ser. No. 24,911
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—18

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF SEPTEMBER, 1972

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Ackerman, Hervey W., Jr., to M & T Chemicals Inc. Photodegradometer. 3,693,020, Cl. 250-219.0fr.

Ackermann, Jacob; Radici, Pierino; and Ferre, Franco, to Societa Italiana Resine S.I.R., S.p.A. Stabilized formaldehyde polymers. 3,692,876, Cl. 260-895.000.

Adair, Edwin Lloyd. Retention catheter and suprapubic shunt. 3,692,029, Cl. 128-349.00r.

Adams, Chester F., Jr.: *See—*
Neitzke, Nicholas R.; and Adams, Chester F., Jr., 3,692,231.

Adams, John F.; and Steltzer, Ernest R. Vehicle marker light. 3,692,998, Cl. 240-8.200.

Adams, Joseph E.; Di Stefano, Edmund J.; and Enderley, Arthur E., to International Business Machines Corporation. Dual acting probe with extractor/guide. 3,693,087, Cl. 324-158.00p.

Adams, Ralph D.; and Lopez, Efrain D., to Omark-Winslow Aerospace Tool Co. Apparatus for machining cutter teeth. 3,691,696, Cl. 51-95.0tg.

Adams, Ralph M.: *See—*
Braun, Ernest J.; and Adams, Ralph M., 3,693,178.

Addeo, Eric John, to Bell Telephone Laboratories, Incorporated. Arrangement for visually informing stations of conditions encountered during establishment of a call. 3,692,938, Cl. 179-2.0tv.

Admiral Corporation: *See—*
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Ljung, Bo Hans Gunnar, 3,691,852.

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Agfa Aktiengesellschaft: *See—*
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Aisin Seiki Kabushiki Kaishi: *See—*
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Akeley, Lloyd T., to Beckman Instruments, Inc. Differential pressure transducer. 3,691,842, Cl. 73-398.00c.

Akimoto, Toshio: *See—*
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Provi, Mike A.; and Aleks, Vytant, 3,692,204.

Alessio, Ralph D., to Tele-Conn Enterprises, Inc. Metronome. 3,691,896, Cl. 84-484.000.

Alexander, George F., to Caterpillar Tractor Company. Accumulator recoil cylinder with oil film applicator. 3,692,368, Cl. 305-10.000.

Alexander, Richard L.: *See—*
Shattuck, Chauncey H., 3,692,321.

Alfa-Laval AB: *See—*
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Allen, Charles F., 10% to Booth, Frank H. Powered swing. 3,692,305, Cl. 272-86.000.

Allen, John Kenneth; and Norman, Marvin Neil, to RCA Corporation. Television image control circuit. 3,692,931, Cl. 178-7.30r.

Allied Chemical Corporation: *See—*
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Alta, Dirk; and Doornbos, Derk Dille. Container of the throw-away type provided with a draining device. 3,692,213, Cl. 222-105.000.

Altieri, Vincent F.; and Tillotson, James E., to Ocean Spray Cranberries, Inc. Canned apple gel and method of preparing same. 3,692,541, Cl. 99-132.000.

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Ammco Tools, Inc.: *See—*
Mitchell, Wallace F., 3,691,878.

Amo, Tadashi; and Nagasawa, Tuneo, to Kao Soap Company, Ltd. Dentifrice composition. 3,692,894, Cl. 424-56.000.

Amosov, Pavel Evgenievich; Smekhov, Vitaly Konstantinovich; Trofimov, Valery Leonidovich; Shvarts, Avely Isaich; Shnepp, Vladimir Borisovich; and Razumovsky, Alexandr Petrovich. Screw rotor machine for compressible media. 3,692,441, Cl. 418-191.000.

AMP Incorporated, mesne: *See—*
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Anaconda Wire and Cable Company: *See—*

Menasoff, George N., 3,692,448.

Anderl, Peter, to Niezoldi & Kramer GmbH. Movie camera with delayed release and scene limiting circuits. 3,692,393, Cl. 352-175.000.

Anderson, Albin R.; and Jennings, John D., to Western Electric Company, Incorporated. Apparatus for frequency adjusting and assembling monolithic crystal filters. 3,691,720, Cl. 53-91.000.

Anderson, Elvin L.; and Graboyes, Harold, to Smith Kline & French Laboratories. Intermediates for preparing acridines. 3,692,834, Cl. 260-566.00b.

Anderson, Richard M.; Parrish, Hushel L., Jr.; and Spade, Kenneth L., to Heil-Quaker Corporation. Air condition apparatus with refrigerant super cooler. 3,691,786, Cl. 62-279.000.

Anderson, Thomas A., to Westinghouse Brake and Signal Company Limited. Semiconductor having a transistor, a thristor and a diode in one body. 3,693,054, Cl. 317-235.000.

Anderson, Thomas E., to General Electric Company. Metal oxide varistor polyphase transient voltage suppressor. 3,693,053, Cl. 317-231.000.

Ando, Shigeo. High-speed automatic hydraulic pressing system. 3,691,946, Cl. 100-269.00b.

Andoniev, Sergei Mikha"·vich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, to Vsesojunzny Nauchno-Issledovatelsky i Proektny Institut po Ochistke Tekhnologicheskikh gazov i stochnykh vod i isopolzovaniju Vtorichnykh Onorgorosursov Predpriyaty Chernoi Metallurgii. Device for evaporative cooling of metallurgical furnacs. 3,692,103, Cl. 165-105.000.

Andrews, Edwin R.: *See—*
Fleming, Robert W.; Wenstrup, David L.; and Andrews, Edwin R., 3,692,907.

Andrychuk, Dmetro, to Texas Instruments, Incorporated. Crystal pulling system. 3,692,499, Cl. 23-301.000.

Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., to Allied Chemical Corporation. Polyhaloisoalkoxyalkyl phosphate esters. 3,692,885, Cl. 260-950.000.

Antonietto, Bruno; and Pagella, Elio, to Olivetti, Ing., C., & C., S.p.A. Tool change device for a machine tool. 3,691,899, Cl. 90-1.00a.

Aoki, Toshikazu: *See—*
Okada, Hiroshi; Osakada, Atsushi; Minami, Satoyuki; Aoki, Toshikazu; Hisamori, Tetsuo; Koyanagi, Hironobu; and Otsuka, Hiromi, 3,692,602.

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Arber, Scott Gordon; and Young, Oswald William John, to United States Borax & Chemical Corporation. Preparation of metal nitrides. 3,692,474, Cl. 23-191.000.

Archer, Sydney; and Bailey, Denis M., to Sterling Drug Inc. 5-(Aminoalkylamino)-6 (or)-halo-8- quinolinemethanol their alkyl ethers and alkanoyl esters. 3,692,790, Cl. 260-287.00r.

Arctec, Incorporated: *See—*
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Arnold, Floyd L.; and Patmore, James R., to Electronic Associates, Inc. Audio/visual teaching device. 3,691,650, Cl. 35-8.00a.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asam, Adolf R., to International Telephone and Telegraph Corporation. Ferroelectric-photoelectric storage unit. 3,693,171, Cl. 340-173.0ls.

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Astafiev, Georgy Vasilievich; Korolkov, Ivan Alexandrovich; and Ozhgikhin, Anatoly Nikolaevich. Surgical apparatus for suturing tissue with staples. 3,692,224, Cl. 227-19.000.

Aston, Bruno D. Applicator assembly for fluent materials. 3,692,417, Cl. 401-122.000.

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Augustin, Gustav, to Kupfer-Asbest-Co. Gustav Bach. Slide ring seal. 3,692,317, Cl. 277-81.000.

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Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, to Ciba-Geigy AG. Dyeing silk and wool fibers in aqueous bath of metallizable fiber-reactive azo dyes and nitrogen-containing polyglycols with after-treatment using metal releasing agent. 3,92,463, Cl. 8-43.000.

Backteman, Hans Ulrich; and Taylor, Richard John, to AB Backtemans Patenter. Lashing fitting. 3,691,595, Cl. 24-81.00e.

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Baker, Donald H.; Brickner, David R.; and Manning, Kenzel P., to Sperry Rand Corporation. Gyromagnetic compass system. 3,691,643, Cl. 33-222.000.

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Baldur, Roman, to Borg-Warner (Canada) Limited, mesne. Air cushion lift pad arrangement. 3,692,192, Cl. 214-1.0be.

Balleis, Peter. Toy tops. 3,691,673, Cl. 46-68.000.

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Berger, Abe, to General Electric Company. Method of producing alkoxy-substituted mercaptoalkyl silanes. 3,692,812, Cl. 260-448.20e.
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Bjork, Lars; Erikson, Uno E.; and Ingelman, Bjorn G. A., to Pharmacia Aktiebolag. Novel 3,5-substituted 2,4,6-triiodobenzoic acids and salts thereof. 3,692,824, Cl. 260-501.110.

Blachut, Theodore J.; Smialowski, Antoni J.; Schut, Gerhardus H.; and Carman, Philip D., to Canadian Patents and Development Limited. Orthocartograph. 3,692,405, Cl. 355-22.000.

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Blance, Robert B.; Cahill, David R.; and Nachtel, Peter. Novel interpolymer blends. 3,692,878, Cl. 260-901.000.

Blank, Werner Josef; and Koral, Jerry Norman, to American Cyanamid Company. Modified non-gelled alkyd resin composition and process for its preparation. 3,692,717, Cl. 260-21.000.

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Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison Sociale Michel & Cie. Reinforced tire. 3,692,080, Cl. 152-359.000.

Boltze, Karl-Heinz; Brendler, Otfried; and Lorenz, Dietrich, to Troponwerke Dinklage & Co. Pharmacologically active esters of N-(3-trifluoromethylphenyl)-anthranilic acid. 3,692,818, Cl. 260-471.00r.

Bond, Donald Spencer, to RCA Corporation. Apparatus for the automatic navigation of a sailing vessel. 3,691,978, Cl. 114-144.000.

Bondi, Pasquale Columbo, to General Electric Company. Variable flow distributor. 3,692,041, Cl. 137-238.000.

Bondley, Ralph J., to General Electric Company. High temperature brazing alloy system. 3,691,607, Cl. 29-194.000.

Boneck, Roger L. Window power actuating device. 3,691,684, Cl. 49-21.000.

Bonnel, Bernard, to Progil. Hydraulic binders and compositions including these binders. 3,692,728, Cl. 260-29.4ua.

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Borreill, Andre B., to Societe Anonyme: Ciments Lafarge. Apparatus for the manufacture of super-white cements. 3,692,286, Cl. 263-32.00r.

Bos, Laurence William, to Western Electric Company, Incorporated. Methods and apparatus for allocating the measured noise and resistance of a thin-film resistor between the resistor proper and the contact pads therefor. 3,692,987, Cl. 235-151.310.

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Boucher, James D.; and Hopkins, Jesse L., to General Electric Company. Pilot and main fuel gas supply means for pressurized gas-fired space heater. 3,692,014, Cl. 126-110.00r.

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Box, E O., Jr., to Phillips Petroleum Company. Dehydrogenation catalyst Group VIII metals on tin-containing supports dehydrogenation catalysts. 3,692,701, Cl. 252-466.00b.

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Boyd, John A. Trash compaction shelter incorporating a removable container. 3,691,943, Cl. 100-215.000.

Boyd, John A. Kitchen compactor. 3,691,944, Cl. 100-229.00a.

Bradshaw, Norman Francis, to International Harvester Company. Control devices. 3,691,867, Cl. 74-491.000.

Brandon, Kenneth F., to Eastman Kodak Company. Apparatus for setting up a rapidly moving web for removal of a side portion therefrom. 3,691,888, Cl. 83-302.000.

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Breithaupt, John T.; and Garcia, Raymond T., to Shell Oil Company. Stair-step thermal recovery of oil. 3,692,111, Cl. 166-252.000.

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Brockway, Charles E.; Schollenberger, Charles S.; and Sachara, Eugene F., to Goodrich, B. F., Company, The. Polyurethane propellant compositions and their preparation. 3,692,597, Cl. 149-19.000.
Brokke, Mervin E., to Stauffer Chemical Company. Bis (3,4,4-trifluoro-3-butenyl) sulfide as a nematocide. 3,692,912, Cl. 424-335.000.
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Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut, to Deutsche Edelstahlwerke Aktiengesellschaft. Production of protective layers on cobalt-based alloys. 3,692,554, Cl. 117-22.000.
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Cahill, David R.: *See—*
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Calderon, Nissim; and Scott, Kenneth W., to Goodyear Tire & Rubber Company, The. Preparation of graft, block and crosslinked unsaturated polymers and copolymers by olefin metathesis. 3,692,872, Cl. 260-878.000.
California Institute of Technology: *See—*
Bauman, Albert J., 3,692,669.
Call, Sterling, to Circuit Equipment Corporation. Machine for cleaning printed circuit board. 3,691,582, Cl. 15-77.000.
Callihan, James M.: *See—*
Bubb, Daniel F.; and Callihan, James M., 3,692,428.
Calvert, Rodney K.; and Scott, Dale Keith, to Mead Corporation, The. Wire forming machine and method. 3,691,808, Cl. 72-190.000.
Cambureanu, Aurel: *See—*
Schwartz, Robert; Manolache, Constantin; Tannenbaum, Marcel; Vasile, Gheorghe; Rey, Vasile; Sima, Constantin; and Cambureanu, Aurel, 3,692,277.
Camiciottoli, Roberto; and Palombari, Maurizio, to Societa Italiana Telecommunicazioni S.p.A. Remote-testing arrangement for two-way transmission channel of PCM telecommunication system. 3,692,964, Cl. 179-175.31r.
Camp, Alfred L., to Wilkins Regulator Co. Automatically regulated fire valve. 3,692,047, Cl. 137-95.000.
Campanini, Sergio, to Berg Mfg. & Sales Co. Fluid pressure brake system. 3,692,366, Cl. 303-9.000.
Canada, Her Majesty the Queen in the right of, as represented by the Secretary of State: *See—*
Kahle, Wilhelm Manfred, 3,693,061.
Canadian General Electric Company, Limited: *See—*
Eastcott, Peter de Hertel; and Jackson, William Herbert, 3,692,153.
Eastcott, Peter de Hertel; and Jackson, William Herbert, 3,692,280.
Canadian Patents and Development Limited: *See—*
Blachut, Theodore J.; Smialowski, Antoni J.; Schut, Gerhardus H.; and Carman, Philip D., 3,692,405.
Cannell, Lawrence G., to Shell Oil Company. Cyclodimerization process. 3,692,854, Cl. 260-666.00a.
Cannuli, Vincent Michael, to RCA Corporation. Method of forming an epitaxial semiconductive layer with a smooth surface. 3,692,594, Cl. 148-172.000.
Canon Kabushiki Kaisha: *See—*
Takahashi, Toru, 3,692,519.
Cantarutti, Armindo, to NRM Corporation. Ply turnup and side wall applying bladder for tire building machine and method. 3,692,605, Cl. 156-132.000.
Canterino, Peter J.: *See—*
Jones, Rufus V.; and Canterino, Peter J., 3,692,504.
Carborundum Company, The: *See—*
Harper, Willard J., 3,691,690.
Miller, Robert B., Jr.; and Stephenson, Jerry E., 3,692,184.
Carduck, Franz Josef: *See—*
Dorschner, Oskar; Carduck, Franz Josef; and Storkebaum, Christoph, 3,692,618.
Carlisle, Dennis Richard, to Rolls-Royce Limited. Fuel injector for a gas turbine engine. 3,691,765, Cl. 60-39.740.
Carlsson, Bengt; and Sundberg, Mauritz R. G., to Aktiebolaget Motala Verkstad. System for manufacturing particle board or the like. 3,692,612, Cl. 156-375.000.
Carlton, Gilbert A.; and Parsons, John K. Building panels. 3,691,710, Cl. 52-251.000.
Carman, Philip D.: *See—*
Blachut, Theodore J.; Smialowski, Antoni J.; Schut, Gerhardus H.; and Carman, Philip D., 3,692,405.
Carney, John L., Jr.: *See—*
Dugge, Richard H.; and Carney, John L., Jr., 3,691,611.
Carney, Richard William James; and De Stevens, George, to Ciba-Geigy Corporation. Tertiary aminoacids. 3,692,819, Cl. 260-471.00r.

Carpenter, Peter E. G.; and Cook, David L., to Square D Company. Moulded-case circuit breaker with improved double-latch mechanism. 3,693,121, Cl. 335-169.000.

Carr, James P., to FMC Corporation. Control mechanism for irrigation system. 3,692,045, Cl. 137-344.000.

Carter, William J., Jr. Specially envelope. 3,692,233, Cl. 229-71.000.

Case, J. I., Company: *See—*
Swanson, Forrest V.; and Sellon, Raymond N., Jr., 3,692,083.

Cass, Richard; and Herbenar, Edward J., to TRW Inc. Torsion bar wheel suspension. 3,692,295, Cl. 267-57.000.

Cassidy, Leon, Jr. Ratchet spinner wrench. 3,691,876, Cl. 81-58.100.

Cassiere, Gerald D.: *See—*
Ferdinand, Irwin J.; Kulbersh, Irwin R.; and Cassiere, Gerald D., 3,691,966.

Cassimatis, Jean; and Vie, Robert. Pneumatic machine for the leak-tight closure of flasks. 3,691,725, Cl. 53-328.000.

Castellion, George Augustus; and Habermann, Joseph Peter, to American Cyanamid Company. Plastic optical filter. 3,692,688, Cl. 252-300.000.

Caterpillar Tractor Company: *See—*
Alexander, George F., 3,692,368.
Connor, Donald H.; and Olson, George E., 3,692,436.
Gresham, Clifford L.; and Robinson, Lorin A., 3,691,805.
Hackmann, Larry G.; and Schmitt, James L., 3,691,908.
Ryberg, John G.; and Landen, Ernest W., 3,691,762.

Cattanach, Hamish A. G. Pressure controlled variable pump output by pass system. 3,692,052, Cl. 137-561.000.

Caunt, Anthony David: *See—*
Crouch, Rosalie Brooks; and Caunt, Anthony David, 3,692,712.

Caven, John A.: *See—*
Caven, John Arthur; and Caven, Robert Winton, 3,691,663.

Caven, John Arthur; and Caven, Robert Winton, to Caven, John A. and Caven, Marjorie A. Reflecting advertising sign. 3,691,663, Cl. 40-125.000.

Caven, Marjorie A.: *See—*
Caven, John Arthur; and Caven, Robert Winton, 3,691,663.

Caven, Robert Winton: *See—*
Caven, John Arthur; and Caven, Robert Winton, 3,691,663.

Cecconi, Giorgio. Process for producing pressure-sensitive transfer sheets. 3,692,556, Cl. 117-36.100.

Celanese Corporation: *See—*
Huguet, Juan L., 3,692,636.
Powell, Stancil Driftwood, 3,692,559.
Rhodes, Cecil John, 3,692,603.

Celanese Corporation of America: *See—*
Gordon, William E., 3,692,823.

Centre for Industrial Research, The National Council for Research and Development: *See—*
Dolev, Amior; Mannheim, Chaim H.; and Schimmel, Moshe, 3,692,546.

Cerrone, Anthony G.: *See—*
Heitman, George H.; Strom, Eric T.; and Cerrone, Anthony G., 3,691,811.

Chafetz, Harry: *See—*
Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,692,826.

Chamber's Process, Ltd., mesne: *See—*
Chambers, Wayne L.; and Chambers, Ronald W., 3,692,647.

Chambers, Ronald W.: *See—*
Chambers, Wayne L.; and Chambers, Ronald W., 3,692,647.

Chambers, Wayne L.; and Chambers, Ronald W., 21% to Chamber's Process, Ltd., mesne and 1/4% of 1% to Zurich, Philip. Copper producing process. 3,692,647, Cl. 204-105.00r.

Chamodon, Pierre, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme) Pont de la Folie. Arrangement for assembling storage cells in batteries. 3,692,588, Cl. 136-171.000.

Champagne, Edwin B., to GCO, Inc. Holography with specular objects. 3,692,381, Cl. 350-3.500.

Champion, Keith Harold, to Rolls-Royce Limited. Combustion chambers. 3,691,766, Cl. 60-39.82p.

Chang, Jiann C.: *See—*
Shenkenberg, David R.; Chang, Jiann C.; and Edmondson, Locke F., 3,692,532.

Charamel, Andre; Duroux, Jacques Marius; Siquet, Serge; and Descroix, Jaques; deceased (by Gras, Daniel; legal representative), to Rhone-Poulenc S. A. Process for the production of oxalic acid. 3,692,830, Cl. 260-533.00r.

Chase Corporation: *See—*
Lania, Anthony R.; and Kirkegard, Neil Jr., 3,692,702.

Chase, Erin O. Mop handle mounting. 3,692,369, Cl. 306-19.000.

Chase, William B.; Jendrisak, Joseph E.; and Kelvey, Harold E., to Shatterproof Glass Corporation. Windowed doors for self-cleaning ovens. 3,692,015, Cl. 126-200.000.

Chase-Shawmut Company, The: *See—*
Jacobs, Philip C., Jr., 3,693,128.

Chatham Container Display Corporation: *See—*
Irvine, Chester A., 3,692,084.

Chauveton, Charles E.: *See—*
Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, 3,692,524.

Cheema, Zafarullah K.; Apice, Pawquale J.; and Little, Edwin D., to Allied Chemical Corporation. Purification of phenol. 3,692,845, Cl. 260-621.00a.

Cheesman, Donald C.: *See—*
Law, John E.; and Cheesman, Donald C., 3,692,246.

Chef Pierre, Inc.: *See—*
Dendrinos, Peter C., 3,692,544.

Chemed Corporation, mesne: *See—*
Stamm, James K.; Loder, Edwin R.; Brungs, Charles A.; and Kerst, Herman, 3,692,704.

Chenot, Charles F., to Sylvania Electric Products, Inc. Lamp employing luminescent manganese-activated strontium barium chloro-aluminate phosphor compositions. 3,693,006, Cl. 313-109.000.

Chepelev, Viktor Gavrilovich: *See—*
Grinchenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavoich; Goldshtein, Jury Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich, 3,693,077.

Chepos, Zavody chemickeho a potravinarskeho strojirenstvi oborovy podnik: *See—*
Staud, Miloslav; and Lazarev, Anatolij, 3,692,862.

Chevron Research Company: *See—*
Liston, Thomas V., 3,692,681.
Stanton, Garth M.; and Drehe, John L., 3,692,677.

Chiarelli, Carl. Automatic fire protection for deep fat fryer. 3,691,936, Cl. 99-337.000.

Chikatsu, Tatsusuke; Shimokawa, Shinichi; Yoshida, Yoshinori; Imamura, Masatugu; Nishiwaki, Ituo; Akimoto, Toshio; and Fujiwara, Tatuji, to Japan Synthetic Rubber Co., Ltd. Process for producing highly pure isoprene. 3,692,861, Cl. 260-681.50r.

Childs, William V.: *See—*
Mac Mullin, Robert B.; Fox, Homer M.; Ruehlen, Forrest N.; and Childs, William V., 3,692,660.

Christopher, Paul G.; and Jelsvik, Ronald E. Cooking apparatus. 3,692,351, Cl. 296-23.00r.

Christy Metal Products, Inc.: *See—*
Dunmire, Paul G., 3,692,062.

Chubb, John Norman, to United Kingdom Atomic Energy Authority. Apparatus for analysing suspended particles. 3,692,412, Cl. 356-103.000.

Chuett, Peabody & Co., Inc.: *See—*
Herman J., Joy, 3,691,600.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Minoru, Shindo; Kanji, Maro; and Teizo, Shinozaki, 3,692,776.

Ciba-Geigy AG: *See—*
Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, 3,692,462.
Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, 3,692,463.
Igglesden, Graham Arthur, 3,692,706.
Martin, Henry; Aebi, Hans; and Ebner, Ludwig, 3,692,911.

Ciba-Geigy Corporation: *See—*
Carney, Richard William James; and De Stevens, George, 3,692,819.
Gubler, Kurt; Menasse, Raphael; and Gatzi, Karl, 3,692,909.
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,692,794.

Cines, Martin R., to Phillips Petroleum Company. Stomp foot having porous face. 3,692,890, Cl. 264-98.000.

Circuit Equipment Corporation: *See—*
Call, Sterling, 3,691,582.

Ciric, Julius, to Mobil Oil Corporation. Crystalline zeolite ZSM-10. 3,692,470, Cl. 23-113.000.

C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Leonard, Didier, 3,692,952.
Teurnier, Roger, 3,693,167.

Cities Service Oil Company: *See—*
Grady, Guido O., 3,692,110.

Clark, Danford E.: *See—*
Ward, John W.; and Clark, Danford E., 3,692,692.

Clark Equipment Company: *See—*
Lake, Edward E., 3,692,198.
Visser, Peter J., 3,691,911.
Witt, Kenneth C., 3,692,138.

Clark, Richard C., to Union Oil Company of California. Wax coated polymeric articles. 3,692,568, Cl. 117-138.8ua.

Clark, Wilbur R.; and Mann, Freeman W., to Landis Tool Company, mesne. Work rest for a machine tool. 3,691,701, Cl. 51-238.000.

Clarke, Benjamin Earl, to Thermolyne Corporation. Apparatus for automatically staining microscope slides. 3,691,988, Cl. 118-6.000.

Clarke, Edgar W. Polymeric compositions and methods of treating. 3,692,722, Cl. 260-28.000.

Clarke, Robert W. Multiple ply moire textile. 3,691,971, Cl. 112-440.000.

Clas, Willi: *See—*
Klotzer, Erhard; and Clas, Willi, 3,692,734.

Clay, Byron Jan: *See—*
Durr, Larry L.; and Clay, Byron Jan, 3,692,467.

Clayton, George W. Nestable traffic marker. 3,692,281, Cl. 256-64.000.

Clegg, Andres Samuel: *See—*
Jones, Ewart Ray Herbert; Meakins, George Denis; and Clegg, Andres Samuel, 3,692,629.

Clement, Gerard, to U.S. Philips Corporation. Secondary emissive electrode. 3,693,005, Cl. 313-103.000.

Clementi, Robert J.: *See—*
Hartigan, James J.; and Clementi, Robert J., 3,692,525.

Clendenin, Norbert T.; and Corum, Tillman L., to Metal Forming and Coining Corporation. Cold extruded article and method of making the same. 3,691,804, Cl. 72-42.000.

Clendennen, Leo; and Smith, Charlie P., to LTV Electrosystems, Inc. Component lead forming tool and method. 3,692,069, Cl. 140-106.000.

Cliftronics, Inc.: *See—*
Ganowsky, Raymond J., 3,693,124.

Cline, Ted L. Tilling apparatus. 3,692,120, Cl. 172-151.000.

Cloutier, Roy L. Picture device and method of making pictures utilizing the same. 3,692,382, Cl. 350-5.000.

Cloyd, Harold S., to Nosco Plastics Incorporated. Pallet. 3,691,965, Cl. 108-58.000.

Clynes, Manfred E. Programmed system for evoking emotional responses. 3,691,652, Cl. 35-22.00r.

Coakley, James L., to Abex Corporation. Reversible fluid power transfer apparatus. 3,691,767, Cl. 60-53.00r.

Cobarg, Claus Christian: *See—*
Napierski, Peinhard; and Cobarg, Claus Christian, 3,692,999.

Cochran, Thomas J.; Hazel, Herbert K.; and Rance, William G., Jr., to International Business Machines Corporation. X-Y rotational positioning system. 3,691,864, Cl. 74-479.000.

Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "-Cockerill": *See—*
Laval, Paul Marie Georges, 3,691,793.

Cohn, Eugene; and Frezza, Robert, to Samcoe Holding Corporation. Three roll processing apparatus, and method for utilization thereof. 3,692,465, Cl. 8-151.000.

Colette, Michael, to Orbit Laboratories, Inc. Multiple function testing device for internal combustion engine. 3,693,073, Cl. 324-16.00r.

Colgate-Palmolive Company: *See—*
Dage, Richard, 3,692,906.
Freedman, Jules, 3,692,796.

Colley, Rowan Herbert, to Rolls Royce Limited. Gas turbine engine thrust deflectors. 3,691,771, Cl. 60-226.00a.

Collins, Arthur A.; and Hill, John Dan, III, to Collins Radio Company. Data exchange and coupling apparatus. 3,692,941, Cl. 179-15.0al.

Collins Radio Company: *See—*
Briggs, Barry D., 3,693,112.
Collins, Arthur A.; and Hill, John Dan, III, 3,692,941.
Northrup, Malcolm B., 3,692,956.

Colortex S.A.: *See—*
Risse, Jean, 3,692,427.

Colton, Douglas Roy; and Rudolph John Kriegler, to Northern Electric Company Limited. Method of reducing the mobile ion contamination in thermally grown silicon dioxide. 3,692,571, Cl. 117-201.000.

Columbia Gas System Service Corporation, mesne: *See—*
Hughes, George C., 3,691,831.

Columbus, Peter S.; and Erikson, Carl R., to Borden, Inc. Filter paper. 3,692,185, Cl. 210-493.000.

Columbus, Peter Spiros; and Mason, Ronald Thomas, to Borden, Inc. Labeling adhesive composition. 3,692,713, Cl. 260-17.4st.

Comet Industries, Inc.: *See—*
Kostur, Robert E., 3,692,288.

Commercial Solvents Corporation: *See—*
Kern, Forrest L., 3,691,954.

Commissariat a l'Energie Atomique: *See—*
Coupat, Bernard; and Musikas, Claude, 3,692,500.

Communications Patents Limited: *See—*
Gabriel, Ralph Parton, 3,693,090.

Compagnie des Freins et Signaux Westinghouse: *See—*
Demarez, Rene; and Dubois, Claude J., 3,692,365.

Compagnie Generale des Etablissements Michelin, raison Sociale Michel & Cie: *See—*
Boileau, Jacques, 3,692,080.

Complexul Pentru Prelucrarea Lemnuliu Reghon: *See—*
Delu, Ion, 3,691,891.

Computervision Corporation: *See—*
Friedman, David; and Levy, Kenneth, 3,693,066.

Conductron Corporation: *See—*
Bhola, Siri R., 3,691,631.

Conlisk, Peter J.: *See—*
Bowling, George W.; Conlisk, Peter J.; and Lenzen, Kenneth H., 3,691,712.

Conn, John B., to Merck & Co., Inc. Indanyl acetic acids. 3,692,825, Cl. 260-515.00a.

Conner, Tom E. Stabilizing units for parked vehicles. 3,692,329, Cl. 280-150.500.

Conners, John A.; Liepelt, Donald W.; and Baulieu, William H., to Jenkins Bros. Butterfly valve. 3,692,276, Cl. 251-306.000.

Connor, Donald H.; and Olson, George E., to Caterpillar Tractor Company. Thermal compensating support for turbocharger shafts. 3,692,436, Cl. 417-406.000.

Conrad, Earl O.: *See—*
Re, Carlo; Conrad, Earl O.; and Conrad, Jack R., 3,692,682.

Conrad, Jack R.: *See—*
Re, Carlo; Conrad, Earl O.; and Conrad, Jack R., 3,692,682.

Consolidation Coal Company: *See—*
Reichl, Eric H., 3,692,505.

Container Corporation of America: *See—*
Helms, Charles Robert, 3,692,232.

Continental Oil Company: *See—*
Culter, John C.; and McClaflin, Gifford G., 3,692,676.
Sparlin, Derry D., 3,692,116.
Wasecheck, Paul H., 3,692,809.
Washecheck, Paul H., 3,692,810.

Control Building Systems, Inc.: *See—*
Lowery, William E., 3,691,711.

Cook, David L.: *See—*
Carpenter, Peter E. G.; and Cook, David L., 3,693,121.

Cooke Engineering Company, The: *See—*
Lancaster, Jesse F., 3,692,966.

Cooper, John, to Matratex Engineers Limited. Guide means. 3,691,857, Cl. 74-89.000.

Corbin, Paul. Automobile suspension. 3,692,324, Cl. 280-96.20r.

Corum, Tillman L.: *See—*
Clendenin, Norbert T.; and Corum, Tillman L., 3,691,804.

Corwin, Howard R.; Hermes, Walter L.; and Jones, Charles, to Curtiss-Wright Corporation. Torsionally resilient drive mechanism. 3,691,792, Cl. 64-31.000.

Coryell, Vincent: *See—*
Levy, Selden; Grant, Stuart; Coryell, Vincent; and Diamond, Fred, 3,692,389.

Cosmopolitan Assurance Company Limited: *See—*
Davey, Peter Gordon, 3,691,821.

Cottle, John E. Hydrogenation of oxidative dehydrogenation by-product. 3,692,859, Cl. 260-680.00e.

Coult, John H. Friction-driven rotary cleaning apparatus with coaxial transmission. 3,691,581, Cl. 15-49.00c.

Coupat, Bernard; and Musikas, Claude, to Commissariat a l'Energie Atomique. Process for the separation of elements of the lanthanide group and elements of the transplutonium group which are present in an aqueous solution. 3,692,500, Cl. 23-338.000.

Courtaulds Engineering Limited: *See—*
Nienstaedt, Robert; and Bunting, James William, 3,692,986.

Courtaulds Limited: *See—*
Jeffcoat, Eith, 3,691,794.

Courtenay, Jerzy Leon: *See—*
Glaze, Stanley George; Smith, Charles Philip; and Courtenay, Jerzy Leon, 3,692,260.

Cowl Industries Limited: *See—*
Stemp, Leslie William, 3,692,142.

Cowles, Walter C.; and Iarossi, Frank J., to Esso Research and Engineering Company. Drip pan LNG tank. 3,692,205, Cl. 220-9.0lg.

CPC International Inc.: *See—*
Johnson, Calvin Keith, 3,692,733.

CPC International Inc., mesne: *See—*
Walon, Raoul Guillaume Phillipe, 3,692,542.

Crafton, Paul A.; and Mittmeyer, Ingmar, to National Telecommunications System, Inc. Communication system. 3,693,155, Cl. 340-147.00r.

Craske, John B. L. Tipping trailers. 3,692,362, Cl. 298-5.000.

Crawford Fitting Company: *See—*
Spontelli, Leonard P., 3,691,604.

Credit Systems, Inc.: *See—*
Di Lello, John, 3,693,156.

Creusot-Loire: *See—*
Mouneydiere, Robert, 3,691,962.

Cromie, Harry W., to Baxter Laboratories, Inc. Prosthetic heart valve having a pair of support rings of dissimilar material. 3,691,567, Cl. 3-1.000.

Crompton & Knowles Corporation: *See—*
Nelson, Alden W., 3,692,447.

Cromwell, Douglas E., to United States of America, Air Force. Jointed door assembly. 3,692,082, Cl. 160-87.000.

Cross, Sidney E. Exhaust gas cleansing system. 3,691,772, Cl. 60-320.000.

Crouch, Rosalie Brooks; and Caunt, Anthony David. Alpha-olefin polymer composition and process for preparing same. 3,692,712, Cl. 260-878.00r.

Crown Zellerbach Corporation: *See—*
Larson, Louis P.; Repking, Edward F.; and Wagner, Gary L., 3,691,964.

Croyle, Jack V.; and Swett, James B., to Dart Industries Inc. Closure for open-mouthed containers or tubular vessels. 3,692,208, Cl. 220-24.500.

Cubic Corporation: *See—*
Isbell, Willard D., 3,691,921.

Cucciati, Carlo; and Buttafava, Pietro, to Honeywell Information Systems Italia. Automatic threshold control circuit for optical card readers and sorters. 3,692,983, Cl. 235-61.11e.

Culter, John C.; and McClaflin, Gifford G., to Continental Oil Company. Method of friction loss reduction in oleaginous fluids flowing through conduits. 3,692,676, Cl. 252-8.55r.

Cunningham, Walter F., to Superior Tabbies Incorporated. Laminated index tab construction. 3,691,662, Cl. 40-23.00a.

Cupler, John A., II. Cone cam assembly. 3,691,855, Cl. 74-55.000.

Curington, Alfred R., to Baker Oil Tools, Inc. High frequency pneumatically actuated drilling hammer. 3,692,122, Cl. 173-119.000.

Curran, Robert J., to Borg-Warner Corporation. Belt retractor and locking mechanism. 3,692,253, Cl. 242-107.400.

Curriston, Loren E.; and Perry, Alden P., to North American Rockwell Corporation. Torque generator. 3,691,853, Cl. 74-5.340.

Curtiss-Wright Corporation: *See—*
Corwin, Howard R.; Hermes, Walter L.; and Jones, Charles, 3,691,792.
Scheerer, Arthur M., 3,691,759.

Cutler, Royal A.; and Schalit, Samuel, to Sterling Drug Inc. Process for combatting slime in paper pulp by using amidinoureas and amidinothioureas. 3,692,625, Cl. 162-161.000.

Cutler-Hammer Inc.: *See—*
Quaai, John A.; and Spellman, Gordon Bar, 3,693,120.

Cyba, Henryk A. Stabilization of organic substances. 3,692,680, Cl. 252-49.600.

Cybertek, Inc.: *See—*
Glenn, William G., 3,692,486.

Cziesla, Manfred: *See—*
Schnell, Hermann; Cziesla, Manfred; and Bottenbruch, Ludwig, 3,692,870.

Czyl, Joseph L.: *See—*
Stikkers, Alexander P.; Elzy, Albert E.; and Czyl, Joseph L., 3,692,016.

da Silva, Jorge Neves: *See—*
de Rocha, Manuel Coelho Mendes; and da Silva, Jorge Neves, 3,692,357.

Dabkowski, Donald S.; and Porter, Lew F., to United States Steel Corporation. Method for effecting the rapid heat-treatment of steel plate. 3,692,591, Cl. 148-144.000.

Dage, Richard, to Colgate-Palmolive Company. Method of treating hypertension with morphanthridines. 3,692,906, Cl. 424-244.000.

Daiichi Seiyaku Co., Ltd.: *See—*
Tsutsumi, Yoshio, 3,692,904.

Daimler-Benz Aktiengesellschaft: *See—*
Reisacher, Josef; and Schmid, Albrecht, 3,691,914.

Dalman, Gary W.; and Neumann, Fred W., to Dow Chemical Company, The. Rearrangement and disproportionation of lower alkyl phenols. 3,692,846, Cl. 260-621.00d.

D'Amico, John Joseph, to Monsanto Company. 3-Cycloalkylthio-3-azabicyclo(3.2.2)nonanes. 3,692,770, Cl. 260-239.0ba.

Danfoss A/S: *See—*
Hansen, Gunnar Lyshoj; and Petersen, Jorgen Hartvig, 3,692,038.

Daniels, David: *See—*
Woodruff, George M.; Schoonmaker, Donald; Daniels, David; and Waxler, Burton S., 3,691,718.

Daniels, Edward N. Vehicle window actuated alarm device. 3,693,150, Cl. 340-63.000.

Danin, Alex. Parking barrier hardware. 3,691,685, Cl. 49-35.000.

Danuser Machine Works, Inc.: *See—*
Danuser, Walter W., 3,691,860.

Danuser, Walter W., to Danuser Machine Works, Inc. Snow blower drive. 3,691,860, Cl. 74-242.10r.

Darlington, Walter A.: *See—*
Ludvik, George F.; and Darlington, Walter A., 3,692,915.

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de Rocha, Manuel Coelho Mendes; and da Silva, Jorge Neves. Apparatus for cutting a slot in a foundation mass for determining deformability and residual stresses in the foundation mass. 3,692,357, Cl. 299-38.000.

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Deacon, Lawrence A. Method and apparatus for bending tubing. 3,691,815, Cl. 72-458.000.

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Decker, Hanns; Hurtmanns, Heinz; and Stockmann, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Lubricant feed means for gyratory crushers. 3,692,249, Cl. 241-215.000.

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Dederra, Carl-Helmut; and Butter, Karl. Method of fabricating a hollow structure having cooling channels. 3,692,637, Cl. 204-9.000.

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Delu, Ion, to Complexul Pentru Prelucrarea Lemnuliu Reghon. Musical instrument with cords and bow. 3,691,891, Cl. 84-275.000.

Demarez, Rene; and Dubois, Claude J., to Compagnie des Freins et Signaux Westinghouse. Method and apparatus for regulating brake control pressure. 3,692,365, Cl. 303-3.000.

Dendrinos, Peter C., to Chef Pierre, Inc. Pie package. 3,692,544, Cl. 99-172.000.

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Dueker, James E., to McDonnell Douglas Corporation. Video tracking, lateral photoeffect seeking electro-optic detector. 3,693,013, Cl. 250-203.00r.
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EVG Entwicklungs u. Verwertungsgesellschaft m.b.H.: *See—*
Gott, Hans; Ritter, Klaus; and Ritter, Josef, 3,692,970.
Ewald Jerome T.; Bach, Lloyd G.; and Lewis, Richard L., to Bendix Corporation. Charging valve. 3,692,039, Cl. 137-118.000.
Ewing, Dean E. Digital splint. 3,692,022, Cl. 129-87.00a.
Ewing, Joan R.: *See—*
Lester, Corrsin; and Ewing, Joan R., 3,692,404.
Eyb, Wolfgang, to Porsche, Dr.-Ing. h.c.F., K.G., Firma. Fuel systems for vehicles, especially motor vehicles. 3,692,051, Cl. 137-544.000.
Fabrique d'Norlogerie Chs-Tissot et fils S.A.: *See—*
Schneider, Jean-Claude, 3,691,758.
Factory Mutual Research Corporation: *See—*
Yao, Cheng, 3,692,118.
Faille, Marc Della; Fripiat, Jose; and Mercier, Jean. Organomineral polymeric material. 3,692,816, Cl. 260-46.50r.
Falce, Louis R.: *See—*
Burgess, James E.; Falce, Louis R.; Graham, Robert L.; and Scott, Allan W., 3,691,630.
Falk, David O.: *See—*
Norton, Charles J.; Falk, David O.; and Oil recovery process using polyalkene oxid polymer solutions with added cations, 3,692,113.
Falls Machine Company: *See—*
Dussel, Paul E., 3,692,060.
Fant, Mae Belle Esco. Food packet. 3,692,536, Cl. 99-77.100.
Faraoni, Adamo Renato: *See—*
Bernard, Jean Andre; and Faraoni, Adamo Renato, 3,691,614.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Hagemann, Hermann; Muller, Erwin; and Fischer, Peter, 3,692,813.
Meisert, Ernst; Striegler, Hellmut; Koch, Hans-Joachim; and Klebert, Wolfgang, 3,692,708.
Rosenkranz, Hans-Jurgen; Rudolph, Hans; and Kreuder, Hans-Joachim, 3,692,560.
Schnell, Hermann; Cziesla, Manfred; and Bottenbruch, Ludwig, 3,692,870.

Traubel, Harro; and Konig, Klaus, 3,692,570.
Witte, Josef; Pampus, Gottfried; Schon, Nikolaus; and Marwede, Gunter, 3,692,760.
Farbenjabriken Bayer Aktiengesellschaft: *See*—
Jennes, Gert; Huther, Edmund; and Wolff, Willi, 3,692,875.
Farbwerke Hoechst Aktiengesellschaft: *See*—
Lorcher, Otfried; and Steffen, Robert, 3,692,710.
Farrar, Ralph C.; and Wofford, Clinton F. Process of coupling alkali metal-terminated polymers with silicic compound in presence of conjugated dienes. 3,692,874, Cl. 260-880.00b.
Faudot, Gerard: *See*—
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Faust, Helmuth: *See*—
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Fava, Ernesto. Hair washing device. 3,692,066, Cl. 132-9.000.
Federal-Mogul Corporation: *See*—
Day, Frank A.; and Repella, James A., 3,692,318.
Feick, John Edwin: *See*—
Darsi, Chandrasekhara Rao; Feick, John Edwin; and Mustaklem, Isa Christopher, 3,692,831.
Feldman, Peter Blandford, to Monsanto Chemicals Limited. Apparatus for the production of containers. 3,692,450, Cl. 425-183.000.
Feldtkeller, Ernst, to Siemens Aktiengesellschaft. Arrangement for reading an electro-optical memory. 3,693,172, Cl. 340-173.0ls.
Fenton, Donald M. Preparation of allyl alcohol from butyrolactone. 3,692,849, Cl. 260-638.00r.
Ferag, Fehr & Reist AG: *See*—
Wetter, Jakob, 3,692,301.
Ferdinand, Irwin J.; Kulbersh, Irwin R.; and Cassiere, Gerald D., to Hirsh Company, The. Corner attachment for lightweight steel shelving. 3,691,966, Cl. 108-144.000.
Ferranti-Packard Limited: *See*—
Atherton, David L., 3,691,960.
Ferrara, Peter J. Acid modification of flour and starch with HCL and HF. 3,692,581, Cl. 127-38.000.
Ferre, Franco: *See*—
Ackermann, Jacob; Radici, Pierino; and Ferre, Franco, 3,692,876.
Ferro Corporation: *See*—
Johnson, Gordon H., 3,692,735.
Fiberglas Canada Limited: *See*—
Gladney, Kurt P.; and Rao, Ramesh P., 3,692,507.
Fick, Franz; and Kobelentz, Otto. Power supply for image converter. 3,693,017, Cl. 250-213.0vt.
Fiderer, Leo. Process for digitizing electric circuit patterns. 3,692,237, Cl. 234-2.000.
Fidos, Henryk: *See*—
Schreiner, Horst; and Fidos, Henryk, 3,692,578.
Fields, Earl C. Wig block. 3,692,031, Cl. 132-9.000.
Fields, Richard P.: *See*—
Rebertus, Robert L.; and Fields, Richard P., 3,692,838.
Filipiev, Oleg Vladimirovich: *See*—
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.
Finger, John F., to Sioux Steam Cleaner Corporation. Damping and auxiliary pumping apparatus. 3,692,433, Cl. 417-382.000.
Fiore, John, to Rex Chainbelt Inc., mesne. Crack detection method and system therefor. 3,691,820, Cl. 73-40.700.
Firnkas, Sepp, to Omniform Incorporated. Watertight seal connection for prefabricated building panel seams. 3,691,708, Cl. 52-228.000.
Fischer & Porter Company: *See*—
Friedman, Milton, 3,693,144.
Metzger, Harold W., 3,691,835.
Fischer, Peter: *See*—
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Buls, Melvin Lawrence; and Varnum, Gerald Frank, 3,692,054.
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Nolte, William C.; and Tyler, Burtis M., 3,691,642.
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Fleming, Robert B., to General Electric Company. Ultra-low temperature thermal regenerator. 3,692,095, Cl. 165-4.000.
Fleming, Robert W.; Wenstrup, David L.; and Andrews, Edwin R., to Richardson-Merrell Inc. Treating viral infections with bis-basic ethers and thioethers of fluorenone and fluorene and pharmaceutical compositions of the same. 3,692,907, Cl. 424-248.000.
Fletcher, Stewart G.; and Haswell, Walter T., Jr., to Latrobe Steel Company. Ferrous alloys and abrasion resistant articles thereof. 3,692,515, Cl. 75-126.00a.
Flipot, Alfred J. P., to Belgonucleaire S. A. Controlled calcination of agglomerated nuclear fuel prior to pelletizing and sintering. 3,692,887, Cl. 264-.500.
Flom, Charles. Single-use toothbrush. 3,691,585, Cl. 15-104.094.
Florjancic, Peter. Closure apparatus. 3,691,913, Cl. 92-76.000.
Flubacker, Charles H. Vending machine with carriage drive selector. 3,692,211, Cl. 221-9.000.
Fluidics, Inc.: *See*—
Rao, Prabhakar B. R., 3,691,981.
FMC Corporation: *See*—
Carr, James P., 3,692,045.
Goodley, George F., 3,691,939.
May, George; and Lill, Melvin H., 3,692,081.
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Fogg, Daniel A., to Gerber Products Company. Product bagging apparatus. 3,691,716, Cl. 53-59.00w.
Folson, Henry J.; Lucas, Daniel R., Jr.; Staats, William A.; and Tucker, James I., to Mattel, Inc. Toy flight simulator and display stand. 3,691,669, Cl. 46-1.00h.
Ford Motor Company: *See*—
Bell, John M.; and Mooney, Robert A., 3,691,641.
Hoffmann, Donald R.; and White, Charles E., 3,691,799.
Liang, Po-Lung; and Pierce, Staley L., Jr., 3,692,432.
Forsstrom, Bo Gosta, to LKB-Produkter AB. Microtome feed mechanism. 3,691,889, Cl. 83-401.000.
Forster, Friedrich M. O. Eddy current system for testing tubes for defects, eccentricity, and wall thickness. 3,693,075, Cl. 324-40.000.
Foster Grant Co., Inc.: *See*—
Brewer, Charles C.; and Killian, Charles R., 3,692,858.
Foster, John A., to J. L. Manufacturing Co. Apparatus for converting molten thermoplastic in cup-like articles. 3,692,456, Cl. 425-412.000.
Fountain Industries, Inc.: *See*—
Syverson, Martelle J., 3,692,165.
Fox, Homer M.: *See*—
Mac Mullin, Robert B.; Fox, Homer M.; Ruehlen, Forrest N.; and Childs, William V., 3,692,660.
Fox, Joseph R.: *See*—
Schaefer, Robert H.; and Fox, Joseph R., 3,691,872.
Fozzard, George B. Process for separating halogenated hydrocarbons by extractive distillation. 3,692,635, Cl. 203-62.000.
Fr. Hesser Maschinenfabrik AG: *See*—
Kuhnle, Paul, 3,692,611.
Frangatos, Gerassimos. Process for producing aldehydes and ketones. 3,692,840, Cl. 260-586.00b.
Franiel, Carol Ann. Laminates. 3,692,235, Cl. 232-1.000.
Frank, Morton E.; Gross, Jesse; and Lesh, Sol. Chemical testing apparatus. 3,692,498, Cl. 23-292.000.
Franklin, Peace, to National Volume Sales Corporation. Apparatus for applying exterminating and preservative compositions for wood. 3,692,469, Cl. 21-63.000.
Franks, Newell A., to Burr Oak Tool & Gauge Company. Method of cutting an elongated tube and apparatus. 3,692,219, Cl. 225-2.000.
Fraser, Robert William; Kushnir, Bud William; and Weizenbach, Bauke. Dispersion strenthened nickel-chromium alloys. 3,692,596, Cl. 148-31.500.
Frazer, Walter S.: *See*—
Ice, Charles O. Jr.; Ice, Lanny G.; and Frazer, Walter S., 3,691,609.
Frech, Everett Bryant, to Riegel Paper Corporation. Universal graphic display material. 3,692,621, Cl. 161-116.000.
Fredkin, Edward; and Renold, Walter, to Information International, Inc. Rapid film reader/recorder utilizing movable cylindrical lens. 3,693,042, Cl. 315-18.000.
Freed, Meier E.: *See*—
Potoski, John R.; and Freed, Meier E., 3,692,791.
Freedman, Jules, to Colgate-Palmolive Company. 4H [1] benzopyrano [3,4-d] isoxazole derivative. 3,692,796, Cl. 260-307.00h.
Freeman, Gerald C.: *See*—
Dlugos, Daniel F.; Freeman, Gerald C.; and Piotroski, Peter N., 3,692,988.
Freiberg, Ashley H.: *See*—
Gutman, Arnold D.; and Freiberg, Ashley H., 3,692,900.
Frezza, Robert: *See*—
Cohn, Eugene; and Frezza, Robert, 3,692,465.
Fridman, Uriel Grigorievich; Mor, Gera Sergeevna; Skadynsh, Rolands Bernkhardovich; and Kuzmenko, Ivan Emelyanovich, to Spetsialnoe Konstruktorskoe bjuro khimizatsu narodnogo khozaistva Latviiskoi SSR. Device for cutting elastic bar stock into specified legths. 3,691,885, Cl. 82-75.000.
Fried-Krupp Geselischaft met beschrankter Haftung: *See*—
Hejj, Erwin, 3,692,001.
Friedman, David; and Levy, Kenneth, to Computervision Corporation. Natural feeling common drive plotter-digitizer. 3,693,066, Cl. 318-576.000.
Friedman, Ira J. Article carrier with lockable carrying handles. 3,692,218, Cl. 224-45.00t.
Friedman, Milton, to Fischer & Porter Company. Pull-in and drop-out delay unit for vehicle detector in traffic-control system. 3,693,144, Cl. 340-37.000.
Friedrich, Kevin F., to Westinghouse Electric Corporation. Electrical bushing having a capacitor choir formed by overchapping capacitor elements. 3,692,928, Cl. 174-143.000.
Friend, George R.: *See*—
Friend, Robert P.; and Friend, George R., 3,691,817.

Friend, Robert P.; and Friend, George R. Mobile frame and body straightener. 3,691,817, Cl. 72-705.000.

Fripiat, Jose: *See—*
Faille, Marc Della; Fripiat, Jose; and Mercier, Jean, 3,692,816.

Frisch, Hans Otto; and Payrhammer, Bernd, to Marker, Hannes. Toe- or heel-holding device for safety ski bindings. 3,692,322, Cl. 280-11.35t.

Fruchard, Alain: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Aono, Masazumi; and Fuutagawa, Ikuo, 3,692,555.
Ono, Hisatake; and Osada, Chiaki, 3,692,800.
Tamai, Yasuo; and Honjo, Satoru, 3,692,523.

Fujii, Keisuke: *See—*
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Fujikake, Kenji; Mutoh, Norio; and Yagi, Yuji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Device for detecting velocity of gas thermoelectrically. 3,691,833, Cl. 73-204.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Arima, Kei; Tamura, Gakuzo; Sakai, Heiichi; and Kohsaka, Masanobu, 3,692,777.

Fujitsu Limited: *See—*
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Takayanagi, Kenjiro; Matsuyama, Kihachiro; Fujiwara, Tadashi; Mizuno, Hideaki; and Akiyama, Naoki, 3,692,576.

Fujiwara, Tatuji: *See—*
Chikatsu, Tatsusuke; Shimokawa, Shinichi; Yoshida, Yoshinori; Imamura, Masatugu; Nishiwaki, Ituo; Akimoto, Toshio; and Fujiwara, Tatuji, 3,692,861.

Fukushima, Masao: *See—*
Takata, Toyoharu; Fujii, Keisuke; Yano, Nobumitsu; Fukushima, Masao; Nagayoshi, Fumio; and Mizuno, Aiko, 3,692,768.

Fukushima, Masatada: *See—*
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Fuller Company: *See—*
Lincoln, Roland L., 3,692,244.

Funk, Buford H., Jr. System for monitoring air vortices comprising plural Schlieren detectors with output signals added and RMS value of sum produced for indication of turbulance. 3,693,015, Cl. 250-209.000.

Furness, Will, to Pegg, Samuel, & Son, Limited. Solvent treatments of textiles. 3,692,464, Cl. 8-149.100.

Furnival, Thomas J.: *See—*
Doversberger, Kenneth W.; and Furnival, Thomas J., 3,693,048.

Fussell, Richard L., to Burroughs Corporation. System for the detection and validation of signal peaks. 3,693,028, Cl. 307-235.000.

Fuutagawa, Ikuo: *See—*
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Fuzesi, Stephen: *See—*
Doerr, Richard L.; and Fuzesi, Stephen, 3,692,880.

Fyens Saekkekom-pagni A/S: *See—*
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Gabriel, Ralph Parton, to Communications Patents Limited. Wired broadcasting systems. 3,693,090, Cl. 325-308.000.

GAF Corporation: *See—*
Vogel, Calvin, 3,692,567.

Gagnon, Robert A. Remotely operated earth moving toy. 3,691,681, Cl. 46-244.00a.

Gaines, Erwin B.; and Baigel, Hyman S. Bed pad and method of use to support an invalid. 3,691,570, Cl. 5-347.000.

Galantay, Eugene E. Piperazino benzocyclohepta [1,2-d] thiazoles and oxazoles. 3,692,788, Cl. 260-268.0tr.

Galanti, Frank, to Warwick Electronics Inc. Electrical component mounting. 3,693,052, Cl. 317-101.0cc.

Gallagher, George F. X., Jr., to United Brands Company. Mobile refrigerator shipping container unit. 3,692,100, Cl. 165-29.000.

Gallo, Mario, to Gallo Wirth & Co. Electrical mass meter. 3,692,128, Cl. 177-210.000.

Gallo Wirth & Co.: *See—*
Gallo, Mario, 3,692,128.

Galonek, Edward A., to Omnitech Inc. Flight deck goggle. 3,691,565, Cl. 2-14.00h.

Gancher, Elias. Gauge and light signal. 3,691,986, Cl. 116-129.000.

Ganowsky, Raymond J., to Cliftronics, Inc. Rotary stepping solenoid. 3,693,124, Cl. 335-228.000.

Garaway, Mark W., to Westinghouse Electric Corporation. Zero crossing detector. 3,693,027, Cl. 307-133.000.

Garcia, Bernabe V. Smoke cleaning device. 3,691,731, Cl. 55-223.000.

Garcia, Raymond T.: *See—*
Breithaupt, John T.; and Garcia, Raymond T., 3,692,111.

Gardiner, John B.; and White, Herschel T., to Esso Research and Engineering Company. Process of forming high-energy propellant binders. 3,692,599, Cl. 149-19.000.

Gardner, Newell John. Anti-theft battery disconnector apparatus. 3,692,965, Cl. 200-44.000.

Garduna, Gerald G. Modular container panel. 3,692,201, Cl. 217-12.000.

Garnier, Jacques: *See—*
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Garrett Corporation, The: *See—*
Summer, James R.; and White, Randall F., 3,692,144.

Garrison, Harold Keith: *See—*
White, Allen A.; Garrison, Harold Keith; and Brooks, Dean P., 3,691,741.

Garzia, Aldo, to Instituto Chemioterapico Italiano S.p.A. Derivatives of aminoalkanoic acids. 3,692,827, Cl. 260-519.000.

Gaskell, Edwin R. Phosphate esters. 3,692,884, Cl. 260-944.000.

Gassino, Teresio, to Olivetti, Ing., C., & C., S.p.A. Key for the keyboards of electric-input office machines. 3,692,167, Cl. 197-98.000.

Gates, Albert George Ronald, to Gestetner Limited. Plate feeding in duplicating machines. 3,691,950, Cl. 101-415.100.

Gates Rubber Company, The: *See—*
Nichols, Kenneth E., 3,692,373.

Gatzi, Karl: *See—*
Gubler, Kurt; Menasse, Raphael; and Gatzi, Karl, 3,692,909.

Gavaert-Afga N.V.: *See—*
Noe, Robert Joseph; Willems, Jozef Frans; and Poot, Albert Lucien, 3,692,522.

Gaworski, Edward T.: *See—*
Silverman, Lee H.; Silverman, Arthur A.; and Gaworski, Edward T., 3,691,583.

Gaylord, John A., to Koch, H., & Sons, Inc. Parachute harness and single point release. 3,692,262, Cl. 244-151.00a.

Gaz de France: *See—*
Glachant, Luc Clement Dominique; and Guillet, Remi Pierre Leon Alain, 3,692,017.

GCO, Inc.: *See—*
Champagne, Edwin B., 3,692,381.

Gebel, Rudolf, to Siemens Aktiengesellschaft. Apparatus for generating a gas jet. 3,692,431, Cl. 417-183.000.

Gebert, Victor L. Apparatus for the simultaneous injection of a foaming plastic resin in a plurality of locations. 3,692,442, Cl. 425-4.000.

Gebr. Bohler & Co. AG: *See—*
Strohmeir, Harald, 3,691,692.

Gebr. Dingerkus: *See—*
Witte, Gunter, 3,691,605.

Gebruder Seidel KG: *See—*
Ritzenhoff, Hermann, 3,692,200.

Gebrueder Buehler AG: *See—*
Schnitzer, Hans, 3,691,644.

Geczy, Bela; and Wilms, Carl Alfred, to Jackson, Byron, Inc. Chain driven spinning, make pu and break out tongs. 3,691,875, Cl. 81-57.140.

Geffner, Ted, to Barder Corporation, The. Anti-friction bearings. 3,692,371, Cl. 308-6.00c.

Gelfgren, Erik Hannes Kurt, to AB Hagglund & Soner. Transport vehicle. 3,692,197, Cl. 214-390.000.

Genbauffe, Francis S., to Robertshaw Controls Company. Control system for a double burner oven or the like and improved parts and method for the same or the like. 3,692,239, Cl. 236-15.00a.

General Aniline & Film Corporation: *See—*
Hartigan, James J.; and Clementi, Robert J., 3,692,525.

General Electric Company: *See—*
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Berger, Abe, 3,692,812.
Bondi, Pasquale Columbo, 3,692,041.
Bondley, Ralph J., 3,691,607.
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Engeler, William E., 3,691,627.
Erwin, John R., 3,692,425.
Fleming, Robert B., 3,692,095.
Hamstra, David C., 3,693,047.
Hoffman, Mary V., 3,692,689.
Hoppin, George S., III; Yount, Reed E.; Berry, Thomas F.; and Barker, James F., 3,692,501.
Kelley, Fred W., Jr.; and Lezan, Georges R. E., 3,693,069.
Kim, Chang Soo; and Palmer, Gerald G., 3,691,628.
King, Randall N., 3,692,584.
Knight, Patrick E.; and Stapleton, Raymond D., 3,692,939.
Meek, Flora L.; and Eff, Christian A., 3,691,937.
Nesbitt, Loyd B.; and Fleming, Robert B., 3,692,099.
Pineo, Carroll Benson, 3,692,372.
Schmitt, Nikolas, 3,693,036.
Siegel, Harvey V., 3,691,654.
Sigsbee, Raymond A.; and Wilson, Ronald H., 3,693,003.
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General Foods Corporation: *See—*
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General Industries Company, The: *See—*
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
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Bain, Douglas G.; and Hartmeyer, James J., 3,692,992.
Beakes, Benjamin L., 3,691,866.
Beard, Jack H., 3,693,085.
Bowman, Karl R.; Jemison, Lawrence L., Jr.; and Parker, Orval H., 3,692,387.
Doversberger, Kenneth W.; and Furnival, Thomas J., 3,693,048.
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Meyer, Barthold F., 3,692,343.

Schaefer, Robert H.; and Fox, Joseph R., 3,691,872.
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Week, Nils Peder, 3,692,156.

General Time Corporation: *See—*
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General Wire Spring Company: *See—*
Silverman, Lee H.; Silverman, Arthur A.; and Gaworski, Edward T., 3,691,583.

Gerber, Leonid Moiseevich: *See—*
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.

Gerber Products Company: *See—*
Fogg, Daniel A., 3,691,716.

Gerkens, Dirk R. D'Arnaud, to N.V. Preservenbedrijf. Method of producing an expanded potato product. 3,692,537, Cl. 99-100.00p.

Gerstmann, Joseph, to Steam Engine Systems Corporation. Heat exchange. 3,692,104, Cl. 165-163.000.

Gestetner Limited: *See—*
Gates, Albert George Ronald, 3,691,950.

Getker, James A.; and Weeks, Horace W., to National Cash Register Company, The. Counter for variable size and shape objects. 3,692,980, Cl. 235-92.0pk.

Geus, John W., to Stamicarbon N.V. Process for preparing magnetizable material. 3,692,683, Cl. 252-62.062.

Ghassemi, Masood: *See—*
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Gianni, Michael H.: *See—*
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Giddings & Lewis, Inc.: *See—*
Achterberg, Raymond C.; and Bunker, Charles L., 3,691,618.

Gievers, John George. Rotation sensitive retarder system. 3,692,385, Cl. 350-157.000.

Gilgore, William H.: *See—*
Shirey, Carey L.; and Gilgore, William H., 3,692,195.

Gillstrom, Robert B., to Westinghouse Electric Corporation. Gage control system for hot rolling mills. 3,691,801, Cl. 72-9.000.

Gilman, Gareld I.; and Wallace, Robert H., to Honeywell Inc. Firing means for discharge tubes. 3,693,044, Cl. 315-57.000.

Gilman, William S.; Jones, John L.; and Rubino, Andrew M., to Armour Pharmaceutical Company. Alcoholated basic aluminum halide compounds and method of making same. 3,692,811, Cl. 260-448.00r.

Gilmer, William N.: *See—*
McCoy, Drew E.; Gilmer, William N.; and Johnston, Edward C., 3,692,668.

Giori, Gualtiero, to De La Rue Giori SA. Pressure cylinder for direct plate printing machines. 3,691,949, Cl. 101-216.000.

Girard, Pierre, to Manufacture des Montres Rolex S.A. Clock with digital display. 3,691,755, Cl. 58-50.00r.

Girardier, Jean-Pierre, to Etablissements Pierre Mengin. Shearing pump. 3,692,422, Cl. 415-121.00b.

Glachant, Luc Clement Dominique; and Guillet, Remi Pierre Leon Alain, to Gaz de France. Submerged combustion heat-generator, in particular for the production of very hot water. 3,692,017, Cl. 126-360.00a.

Gladney, Kurt P.; and Rao, Ramesh P., to Fiberglas Canada Limited. Production of alkali metal silicate fibers. 3,692,507, Cl. 65-2.000.

Gladow, Dean E.; and Wilkes, Donald F., to Rolamite Incorporated. Rotary motion transmitting apparatus. 3,691,871, Cl. 74-798.000.

Glaser, David, to Burroughs Corporation. Cathodes with treated apertures for interconnecting gas cells of a display panel and method for making same. 3,693,046, Cl. 315-169.000.

Glass, Marvin, & Associates: *See—*
Glass, Marvin I.; Katzman, Allison W.; and Meyer, Burton C., 3,691,680.

Glass, Marvin I.; Katzman, Allison W.; and Meyer, Burton C., to Glass, Marvin, & Associates. Illuminated figure toy. 3,691,680, Cl. 46-228.000.

Glasser, James R.; and Tomsa, Stanley J. Serrasoid phase modulator. 3,693,113, Cl. 332-9.00r.

Glaxo Laboratories Limited: *See—*
Jones, Ewart Ray Herbert; Meakins, George Denis; and Clegg, Andres Samuel, 3,692,629.
Oughton, John Francis, 3,692,781.

Glaze, Stanley George; Smith, Charles Philip; and Courtenay, Jerzy Leon, to Hobsen, H. M., Limited. Damping devices. 3,692,260, Cl. 244-78.000.

Glenn, William G., to Cybertek, Inc. Methods and apparatus for obtaining the quantitation and the concentrations of precipitin reactions and participating molecules in biological fluids. 3,692,486, Cl. 23-230.00b.

Glidden Electric Corporation, The: *See—*
Glidden, Roger C., 3,691,593.

Glidden, Roger C., to Glidden Electric Corporation, The. Data dialing transmitter. 3,691,593, Cl. 179-2.0dp.

Globe Ticket Company: *See—*
Pargeon, Fred H., 3,692,222.

Globe-Union Inc.: *See—*
Vetor, Earl Leon; and Faust, Helmuth, 3,692,587.

Glover, Cecil C. Golf club having integrally formed face and sole plate with weight means. 3,692,306, Cl. 273-80.700.

Godai, Tomokazu; and Tanaka, Osamu, to Kobe Steel, Ltd. Flux for submerged arc welding. 3,692,590, Cl. 148-23.000.

Godwin, Gilbert A.: *See—*
Pratt, Chapin A.; and Godwin, Gilbert A., 3,692,129.

Goetz, Frederick E.; and Hause, James R., to International Business Machines Corporation. Wafer polishing machine. 3,691,694, Cl. 51-80.000.

Goetz, Lionel J.: *See—*
Goetz, Robert H.; and Goetz, Lionel J., 3,692,018.

Goetz, Robert H.; and Goetz, Lionel J. Cardiac assistance device. 3,692,018, Cl. 128-1.00r.

Goff, James R., to Nelson, Robert T. Abrasive surface cleaning apparatus. 3,691,689, Cl. 51-9.000.

Goff, Randall: *See—*
Gorgens, Joseph E.; Heske, William A.; and Goff, Randall, 3,691,843.

Goldberg, Arnold J.; and Knavish, Leonard A., to PPG Industries, Inc. Flow and edge control in vertical sheet drawing. 3,692,510, Cl. 65-203.000.

Goldshtein, Jury Moiseevich: *See—*
Grinchenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavoich; Goldshtein, Jury Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich, 3,693,077.

Goldsworthy Engineering, Inc.: *See—*
Goldsworthy, William B.; and Hardesty, Ethridge E., 3,692,601.

Goldsworthy, William B.; and Hardesty, Ethridge E., to Goldsworthy Engineering, Inc. Method for making a storage tank by applying continuous filaments to the interior surface of a rotating mold. 3,692,601, Cl. 156-74.000.

Goller, Heinz: *See—*
Degen, Bruno; Goller, Heinz; Kniege, Wilfried; Noll, Walter; and Buchner, Werner, 3,692,732.

Golstein, Jean Pierre, to Solvay & Cie. Gas phase polymerization of vinyl chloride. 3,692,718, Cl. 260-23.0xa.

Gonta, Stewart J.; and Hallis, Thomas, Jr., to Union Oil Company of California. Wax coating process for corrugated paperboard. 3,692,564, Cl. 117-102.00r.

Goodley, George F., to FMC Corporation. Method and apparatus for binding packages. 3,691,939, Cl. 100-2.000.

Goodrich, B. F., Company, The: *See—*
Brockway, Charles E.; Schollenberger, Charles S.; and Sachara, Eugene F., 3,692,597.
Srail, Raymond C.; and Taylor, Ray D., 3,692,719.

Goodyear Tire & Rubber Company, The: *See—*
Brobeck, Von H.; and Zulick, Mike, 3,692,090.
Calderon, Nissim; and Scott, Kenneth W., 3,692,872.
St. Cyr, David R., 3,692,756.
Underwood, Theodore A., 3,692,742.

Gordon, William E., to Celanese Corporation of America. Method for preventing explosions. 3,692,823, Cl. 260-497.00a.

Gorgens, Joseph E.; Heske, William A.; and Goff, Randall, to Dresser Industries, Inc. Condition responsive apparatus. 3,691,843, Cl. 73-411.000.

Gorman, William G.; and Katz, Erich, to Sterling Drug Inc. Aqueous magnesium hydroxide suspensions. 3,692,898, Cl. 424-158.000.

Gorton Machine Corporation: *See—*
Mousseau, Daniel J.; and Larsen, Charles A., 3,691,626.

Goteborgs Bandvaveri AG: *See—*
Ivarsson, Nils Ture, 3,692,361.

Gott, Hans; Ritter, Klaus; and Ritter, Josef, to EVG Entwicklungs u. Verwertungsgesellschaft m.b.H. Electric resistance welding machines. 3,692,970, Cl. 219-56.000.

Gouirand, Rene, to Mercadante, Joseph. Air suspension with saddle members. 3,692,325, Cl. 280-104.50a.

Goulding, Kenneth Charles, to Magnavox Electronics Company, Limited, The. Umbrella spindles for automatic disc changing phonographs. 3,692,315, Cl. 274-10.00s.

Gouldthorpe, Hugh W.: *See—*
Byrns, Robert E.; Gouldthorpe, Hugh W.; and Lamison, Vernon L., 3,693,117.

Gourdine Coating Systems, Inc.: *See—*
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Gozen Spierenburg: *See—*
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Grabovac, Bosko. Torque indicating tool. 3,691,826, Cl. 73-139.000.

Graboyes, Harold: *See—*
Anderson, Elvin L.; and Graboyes, Harold, 3,692,834.

Grace, W. R. & Co.: *See—*
Dolbear, Geoffrey Emerson, 3,693,071.
McDaniel, Carl V.; Baker, Richard William; and Rundell, Clark Ace (said McDaniel and said Rundell assors. to), 3,692,665.

Grady, Guido O., to Cities Service Oil Company. In situ retorting and hydrogenation of oil shale. 3,692,110, Cl. 166-245.000.

Grafton, Jim R; Wilkins, Glenn E.; and Murphy, Joseph F., to Blackhawk Metal Products, Inc. Gas-fired cooking grill. 3,692,013, Cl. 126-41.00r.

Graham, Robert L.: *See—*
Burgess, James E.; Falce, Louis R.; Graham, Robert L.; and Scott, Allan W., 3,691,630.

Graham, Robert P. Neutralization of straw by adding potato peelings. 3,692,530, Cl. 99-10.000.

Graham, Timothy. Protective container for clothing. 3,692,171, Cl. 206-7.00c.

Grant, Stuart: *See—*
Levy, Selden; Grant, Stuart; Coryell, Vincent; and Diamond, Fred, 3,692,389.

Grantham, Frederick W., to Mecca Bros. Inc. Sensing means for folder. 3,692,303, Cl. 270-61.000.

Gras, Daniel: *See—*
Charamel, Andre; Duroux, Jacques Marius; Siquet, Serge; and Descroix, Jaques, 3,692,830.

Grayson, Bobby W. Wire line centralizer assembly. 3,692,109, Cl. .

Green, Norman; and Vergara, William C. Rapid acting abrasive trimmer for micro-electronic devices. 3,691,695, Cl. 51-8.000.

Greenberg, Samuel. Mouthguard with lip protector. 3,692,025, Cl. 128-136.000.

Greenwood, Arthur R.; and Vesely, Kenneth D., to Universal Oil Products Company. Apparatus for continuous reforming-regeneration process. 3,692,496, Cl. 23-288.00g.

Greenwood, Edward L. Identification system for water pollution detection. 3,691,983, Cl. 116-114.00r.

Greenwood, Kenneth: *See—*
Jackson, Squire Ronald; Greenwood, Kenneth; Heaton, Alban; and Harrison, Alwin, 3,691,761.

Grenda, Edward P.; Guiguizian, Jacques; and Shneider, Harold M., to Honeywell, Inc. Fiber optic mark sense read head, mechanically free from electrical connections. 3,693,019, Cl. 250-219.00d.

Gresham, Clifford L.; and Robinson, Lorin A., to Caterpillar Tractor Company. Ball sizing machine with gravity return. 3,691,805, Cl. 72-75.000.

Grinchenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavoich; Goldshtein, Jury Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich. Electric drill. 3,693,077, Cl. 324-54.000.

Groff, Gaylord L.; and Williams, Ronald H., to Minnesota Mining and Manufacturing Company. Metal salt catalysts for epoxy-anhydride resin systems. 3,692,715, Cl. 260-18.0ep.

Grolman, Bernard, to American Optical Corporation. Method of making near-point cards for binocular refraction. 3,692,604, Cl. 156-108.000.

Gronwick, Jerry P.; Illian, Douglas F.; and Westphal, Donald J., to Sunbeam Corporation. Electric pressing iron. 3,691,660, Cl. 38-77.830.

Gross, Jesse: *See—*
Frank, Morton E.; Gross, Jesse; and Lesh, Sol, 3,692,498.

Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Surface-activated fluorocarbon objects. 3,692,569, Cl. 117-138.8uf.

Gruschka, Bernhard; and Herrmann, Berthold, to Voith Getriebe KG. Method of and system for changing the transmission ratio of a hydrodynamic vehicle transmission. 3,691,768, Cl. 60-54.000.

Grutsch, James F.; and Mallatt, Russell C., to Standard Oil Company. Method and apparatus for regenerating spent caustic cresylate solutions. 3,692,473, Cl. 423-183.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Raczynski, John R.; and Silkaitis, Mitch, 3,692,962.

Gubler, Kurt; Menasse, Raphael; and Gatzi, Karl, to Ciba-Geigy Corporation. Methods of combatting fungi using 6-alkylthio and 6-phenylthio pyrimidine derivatives. 3,692,909, Cl. 424-251.000.

Gude, Fritz: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,692,749.

Guest, Robert J., to Halliburton Company. Leak detector and method. 3,691,819, Cl. 73-40.50a.

Guevara, Balagtas F.: *See—*
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Guhl, Jay F. Fork lift refuse bin and baler accessory. 3,691,945, Cl. 100-229.00r.

Guiguizian, Jacques: *See—*
Grenda, Edward P.; Guiguizian, Jacques; and Shneider, Harold M., 3,693,019.

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Gulf Research & Development Company: *See—*
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Gulf Research and Development Company: *See—*
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Gunjigake, Koreaki: *See—*
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Gunning, Harry E.; and Jameson, Bruce G., to Esso Research and Engineering Company. Desulfation of reforming catalysts. 3,692,693, Cl. 252-415.000.

Gurevich, Grigory Zakharovich: *See—*
Grinchenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavoich; Goldshtein, Jury Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich, 3,693,077.

Gurwood, Alexander G. Electro-conductive and heat barrier coatings for ceramic bodies. 3,692,573, Cl. 117-211.000.

Guth, Edwin F., Company, The: *See—*
Price, Lorenzo S., 3,693,045.

Gutman, Arnold D., to Stauffer Chemical Company. Cyanodithiaimidocarbonate phosphates. 3,692,882, Cl. 260-940.000.

Gutman, Arnold D.; and Freiberg, Ashley H., to Stauffer Chemical Company. Bis-phosphoroamides, bis-phosphonoamides, and phosphono-phosphoroamides useful as insecticides and miticides. 3,692,900, Cl. 424-205.000.

Guzzi, Alberto; and Magagnoli, Remo. Photographic color couplers. 3,692,833, Cl. 260-559.00s.

Gyongyosi, Laszlo, to Ingersoll-Rand Company. Drilling machine. 3,692,123, Cl. 173-147.000.

Habermann, Joseph Peter: *See—*
Castellion, George Augustus; and Habermann, Joseph Peter, 3,692,688.

Hackmann, Larry G.; and Schmitt, James L., to Caterpillar Tractor Company. Combined hydraulic and mechanical detent disengaging means. 3,691,908, Cl. 91-412.000.

Hagemann, Hermann; Muller, Erwin; and Fischer, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Stabilization of organic isocyanates. 3,692,813, Cl. 260-453.0sp.

Hager, Alois, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Plant for continuously refining pig iron. 3,692,290, Cl. 266-13.000.

Hager, Frederick M., to Uniroyal Ltd. Method of treating pentachlorophenol. 3,692,561, Cl. 117-100.00a.

Hajos, Zoltan George, to Hoffmann-La Roche Inc. and Shell Oil Company. Stereospecific total steroidal synthesis via substituted c/d-trans indanones. 3,692,803, Cl. 260-340.500.

Halasa, Adel F.: *See—*
Sommars, Gary L.; and Halasa, Adel F., 3,692,883.

Hales, Paul N. Shirt display hanger. 3,692,269, Cl. 248-360.000.

Halibrand, Henry T. Transmission. 3,691,862, Cl. 74-379.000.

Halkyard, Harold Lees; Bliss-Hill, Herbert Brian; and Tewsley, William, to Stibbe Machinery Limited. Machine for producing squared-off plots for use in programming knitting and other textile machines. 3,693,168, Cl. 340-172.500.

Hall, Crayton G., to Ethyl Corporation. Process for producing foamed metal. 3,692,513, Cl. 75-20.00f.

Hall, John A., Jr.; and Mc Cann, John J., to Polaroid Corporation. Electrically responsive light filter. 3,692,388, Cl. 350-312.000.

Hall, Thomas, A. Water tester for pools. 3,692,490, Cl. 23-253.00r.

Halliburton Company: *See—*
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Hallis, Thomas, Jr.: *See—*
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Hamabe, Takeshi; and Suzuki, Takashi, to Matsushita Electric Industrial Co., Ltd. Continuous anodic oxidation method for aluminum and alloys thereof. 3,692,640, Cl. 204-28.000.

Hamco Machines & Electronics Corported: *See—*
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Hampe, Walter R.; Simon, Albert B.; Hampton, William H.; and Decker, William E., 1/2% each to Westinghouse Electric Corporation and Hoffman Diamond Products, Inc. Rotary diamond core bit. 3,692,127, Cl. 175-330.000.

Hampton, William H.: *See—*
Hampe, Walter R.; Simon, Albert B.; Hampton, William H.; and Decker, William E., 3,692,127.

Hamstra, David C., to General Electric Company. Apparatus for protecting electrical devices. 3,693,047, Cl. 317-13.00b.

Hancock, Charlie L., to Westinghouse Electric Corporation. Electrical connection box arrangement for appliance. 3,692,377, Cl. 312-223.000.

Handte, Heinz: *See—*
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Hannon, Charles N.: *See—*
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Hannon, Warren W.: *See—*
Hannon, Warren W.; and Hannon, Charles N., 3,691,721.

Hannon, Warren W.; and Hannon, Charles N., to Hannon, Warren W. Folding mechanism for multiple section stacked newspapers. 3,691,721, Cl. 53-120.000.

Hansen, Gunnar Lyshoj; and Petersen, Jorgen Hartvig, to Danfoss A/S. Device for venting oil pumps. 3,692,038, Cl. 137-116.000.

Hanzawa, Yasuo, to Okabe Company Limited. Thread rolling machine for manufacturing a particular type of rolled thread. 3,691,806, Cl. 72-92.000.

Hara, Yoshiaki; Masagaki, Akio; and Iguchi, Masaaki, to Nippon Steel Corporation. Apparatus for blowing high-temperature reducing gas into blast furnace. 3,692,293, Cl. 266-29.000.

Harasta, Clarence John: *See—*
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Harbonn, Jacques; and Garnier, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Fluid tight electric connector. 3,693,133, Cl. 339-48.000.

Hard, Carl G. Transportable breakwater. 3,691,774, Cl. 61-5.000.

Hardesty, Ethridge E.: *See—*
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Harding, Hollis J. Die puller. 3,691,610, Cl. 29-255.000.

Harf, Kenneth G., to Singer-General Precision, Inc. Digital oscillator having a fast response using two one-shot multivibrators and a pair of NAND gates. 3,693,102, Cl. 328-188.000.

Harmetz, Ronald: *See—*
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Harper, Willard J., to Carborundum Company, The. Abrasive blast cleaning arrangement. 3,691,690, Cl. 51-13.000.
Harr, George B. Process of providing a fuel tank in a vehicle. 3,691,620, Cl. 29-451.000.
Harris, Joseph Warren, to C. R. Industries. Long handled wrench. 3,691,877, Cl. 81-177.00a.
Harris, Richard H., to International Business Machines Corporation. Capacitive coupling switch and actuator. 3,693,059, Cl. 317-249.00r.
Harris-Intertype Corporation: *See—*
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Harrison, Alwin: *See—*
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Hartmeyer, James J.: *See—*
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Harvey, Donald M., to Eastman Kodak Company. Film transporting mechanism. 3,691,920, Cl. 95-13.000.
Hasebe, Takefumi; and Yamada, Kazuo, to Yokogawa Electric Works, Ltd. Intermittent recorders. 3,693,180, Cl. 346-17.000.
Hasegawa, Tatsuo; and Kobayashi, Ikuya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Initially intermittently flashing brake lamp circuit. 3,693,151, Cl. 340-72.000.
Hashimura, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha; a/k/a Tokyo Shibaura Electric Co., Ltd. High-frequency heating apparatus having electromagnetic wave agitating device. 3,692,967, Cl. 219-10.550.
Haslehurst, Arthur Kinder. Edge control apparatus for sheet material. 3,692,221, Cl. 226-23.000.
Hasselblad, Fritz Victor: *See—*
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Haswell, Walter T., Jr.: *See—*
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Hasz, John R. Damping means for increasing the minimum dynamic stiffness of a shaft. 3,692,370, Cl. 308-1.000.
Hatch, Clifford V. Temperature controlled water dispensing device for animals. 3,691,997, Cl. 119-71.000.
Hauck, Erwin A.: *See—*
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Hauth, Jean-Marc, to Societe des Fonderies de Pont-A- Mousson, Nancy. Disc brake and support means therefore. 3,692,148, Cl. 188-18.00a.
Hawrylo, Frank Zygmunt; and Kressel, Henry, to RCA Corporation. Method of forming semiconductor device with smooth flat surface. 3,692,593, Cl. 148-172.000.
Hawthorne, Vaughn T. Railroad car air brake failure indicator. 3,691,982, Cl. 116-70.000.
Hay, Russell G.; McNulty, John G.; and Walsh, William L., to Gulf Research and Development Com,' :y. Process for preparing esters. 3,692,822, Cl. 260-475.00r.
Hayashi, Yoshihiro: *See—*
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Hayes, Robert M. Knife sharpener. 3,691,700, Cl. 57-210.000.
Hays, Willard C.; and Smith, James D., to Industrial Nucleonics Corporation, mesne. Cross-axis control for three or four roll calenders. 3,691,940, Cl. 100-41.000.
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Heightley, John Donnell; and Waaben, Sigurd Gunther, to Bell Telephone Laboratories, Incorporated. Two-Terminal dual PNP transistor semiconductor memory. 3,693,173, Cl. 340-173.00r.
Heil-Quaker Corporation: *See—*
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Heitman, George H.; Strom, Eric T.; and Cerrone, Anthony G., to Wyman-Gordon Company. Extrusion die. 3,691,811, Cl. 72-272.000.
Hejj, Erwin, to Fried-Krupp Gesellschaft met beschrankter Haftung. Circular piston internal combustion engine. 3,692,001, Cl. 123-8.090.
Held, Kurt. Edge burr removal apparatus. 3,691,898, Cl. 90-11.00r.
Hellwig, Helmut W., to United States of America, Army. Molecular frequency standard. 3,693,008, Cl. 250-41.300.
Helms, Charles Robert, to Container Corporation of America. Finger hole arrangement for article carriers. 3,692,232, Cl. 229-52.00b.
Henkel & Cie G.m.b.H.: *See—*
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Hennessey, Russell J.; and McLaren, Edwin C., to Hoerner Waldorf Corporation. Pour spout container. 3,692,227, Cl. 229-17.00r.
Hennig, Arnold; and Hennig, Kurt. Stripper device. 3,691,588, Cl. 15-256.500.
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Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. 1-Halo-3,7,7,11,11-pentamethyl-di-and tri-enes. 3,692,851, Cl. 260-654.00r.
Henriksson, Sune Torsten; and Muotka, Ragnar Ludvig. Method of open-pit mining. 3,692,364, Cl. 299-18.000.
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Henry, Francis B. Live action backboard. 3,692,307, Cl. 273-29.00a.
Hentschel, Gerhard Oskar, to Hentschel, Valter Sven Erwin. Detergent. 3,692,684, Cl. 252-89.000.
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Herndon, John W., to United States of America, Navy. Roll and pitch simulator utilizing 360& display. 3,692,934, Cl. 178-7.50d.
Herod, Donald M.; Engelman, John C.; and Johnston, William J., to General Motors Corporation. Optical analog display device. 3,692,383, Cl. 350-69.00r.
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Hestad, Alfred M.; and Bouknecht, Max A., to International Telephone and Telegraph Corporation. Toll restrictor circuit. 3,692,951, Cl. 179-27.0cb.
Hetrich, Arthur Ronald, to Raybestos-Manhattan, Inc. Method and apparatus for forming corrugated plastic tubing. 3,692,889, Cl. 264-92.000.
Hetzel, Max, to Omega Louis Brandt & Frere S.A. Vibratory drive systems. 3,691,754, Cl. 58-23.00d.
Heusdens, Wilhelmus; and Guevara, Balagtas F., to Ralston Purina Company. Method of preparing protein fortified vegetable product. 3,692,531, Cl. 99-17.000.
Hewlett Packard Company: *See—*
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Hickey, William G.; and Kenyon, Richard L., to Parker-Hannifin Corporation. Fuel tank inerting system. 3,691,730, Cl. 55-166.000.
Hickman, Albert F., to Hickman Developments, Inc. Full axle shear rubber spring suspension for vehicles. 3,692,326, Cl. 280-124.00r.
Hickman Developments, Inc.: *See—*
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Higginbotham, William W., to Monroe Auto Equipment Co. Air spring shock absorber unit. 3,692,296, Cl. 267-65.000.
Hilberg, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Data storage system with means for eliminating defective storage locations. 3,693,159, Cl. 340-172.500.
Hildebrand, Peter: *See—*
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Hiller, Carl Duane; and Karge, Harold W., to Bethlehem Steel Corporation. Interlocked type wire strand. 3,691,751, Cl. 57-145.000.
Hilpert, Conrad R., to Twin Disc, Incorporated. Fluid power control system for vehicles. 3,692,160, Cl. 192-4.00c.
Hinkley, Clyde E.; and Lusk, William A. Pace setter. 3,691,984, Cl. 116-116.000.
Hiramatsu, Yukio: *See—*
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Hirao, Mamoru; and Mitsuhashi, Masakazu, to Hayashibara Company. Process for the production of starch syrups. 3,692,580, Cl. 127-29.000.
Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Color television receiver with color signal correction for various transmission channels. 3,692,929, Cl. 178-5.40r.
Hirooka, Masaaki; Takeya, Kenji; Uno, Yoshihiro; Yamane, Akira; and Maruyama, Kunio. Highly lactonized copolymers and alternating copolymers using unsaturated ethers. 3,692,754, Cl. 260-80.30e.
Hirschman, Howard I.; and Evers, James C., to Pitney Bowes-Sage, Inc. Flash tube holder assembly. 3,692,994, Cl. 240-11.40r.
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Hodgson, William S. Technique for recovering sea moss and the like. 3,691,737, Cl. 56-9.000.
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Hoff, George L.: *See—*
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Hoffman Diamond Products, Inc.: *See—*
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Hoffman, Mary V., to General Electric Company. Phosphor comprising lanthanum cerium thorium phosphate. 3,692,689, Cl. 252-301.10l.
Hoffmann, Donald R.; and White, Charles E., to Ford Motor Company. Latch assembly. 3,691,799, Cl. 79-84.000.
Hoffmann-La Roche Inc.: *See—*
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Hohnerlein, Gunther Ernst; Meinhardt, Gunther Max; and Hildebrand, Peter, to Babcock & Wilcox, Limited. Fluid flow resistor. 3,692,064, Cl. 138-42.000.
Hojo, Shiro; and Komiya, Kuniko, to Japan Gas-Chemical Company, Inc. $V_2O_5/TiO_2/K_2SO_4$ catalyst suitable for preparation of phthalic anhydride. 3,692,699, Cl. 252-440.000.
Hoke, Donald Irvin, to Lubrizol Corporation, The. Water-soluble sulfonate polymers as flocculants. 3,692,673, Cl. 210-52.000.
Holdrege, Charles Truman, to Bristol-Myers Company. 7-[N-(substituted-imidoyl)aminoacetamido] cephalosporanic acids and derivatives thereof. 3,692,779, Cl. 260-243.00c.
Holland, Dewey George, to Air Products and Chemicals, Inc. Electrofluorination process using thioesters. 3,692,643, Cl. 204-59.00r.
Holler, Howard V.: *See—*
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Holler, Paul; and Scholten, Paul, to Huttenwerk Oberhausen AG. Magnetic detection of surface faults in an elongated metal body by passing electric-current pulses therethrough while a magnetic tape is displaced along the surface of the body. 3,693,074, Cl. 324-37.000.
Hollis, Samuel D.; and Winston, Philip E., Jr., to Pennsylvania Industrial Chemical Corporation. Process for preparing a terpene phenolic condensation product. 3,692,844, Cl. 260-619.00d.
Hollister, Kenneth R.: *See—*
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Holtrup, Bernhard; and Laabs, Johannes. Mineral mining installations. 3,691,775, Cl. 61-450.000.
Holzer, Walter U. Refrigerator thermostat and arrangement thereof. 3,691,782, Cl. 62-209.000.
Holzmann, Paul. Self-propelled pipe cart. 3,692,135, Cl. 180-19.00r.
Homier, Robert I.; and Posh, Raymond C., to Lear Siegler Incorporated. Adjustable seat assembly. 3,692,271, Cl. 248-394.000.
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Hong, Soon Pil. Automotive visor. 3,692,355, Cl. 296-97.00g.
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Hordler, Gisbert. Hinged container. 3,692,175, Cl. 206-45.340.
Horger, Georg, to National Cash Register Company, The. Encapsulation process by complex coacervation using polymers and capsule product therefrom. 3,692,690, Cl. 252-316.000.
Horn, Cornelis Jacob; Kats, Mindert; Marcelinus, Sigibertus; and Van Uffelen, Catherinus. Apparatus for making coffee, tea and similar beverages. 3,691,934, Cl. 99-290.000.
Hornbeck, Clarnece J., to Air Products and Chemicals, Inc. Suspension system for multi-walled containers. 3,692,206, Cl. 220-15.000.
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Hosterman, Harry L.; Barnett, Charles B.; and Ripley, Clarence A., Jr. Non-contacting measuring probe. 3,692,414, Cl. 356-167.000.
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Houston, Jack W. Foldable umbrella. 3,692,035, Cl. 135-25.000.
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Hudson, Edward C., Jr., to Hudson Corporation. Method of fabricating a semiconductor magnetic transducer. 3,692,595, Cl. 148-187.000.
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Hughes, George C., to Columbia Gas System Service Corporation, mesne. Variable orifice meter. 3,691,831, Cl. 73-203.000.
Hughes, Harry E., Jr.; Morton, Jack A.; and Wachs, Meyer H., to Bell Telephone Laboratories, Incorporated. Manipulation of semiconductor elements by magnetic means. 3,692,168, Cl. 198-41.000.
Huguet, Juan L., to Celanese Corporation. Separation of a mixture comprising vinyl acetate, ethyl acetate, and acetic acid by distillation. 3,692,636, Cl. 203-71.000.
Huhn, Helmut; and Hoppe, Lutz, to Wolff & Co., Aktiengesellschaft. Shrinkable film-forming copolyamides prepared by copolymerizing ω-aminoundecanoic acid and the salt of a dicarboxylic acid and trimethylhexamethylene diamine. 3,692,748, Cl. 260-78.00a.
Huling, Fred W., Jr., to Laminated Wood Products Co. Air control system. 3,691,929, Cl. 98-33.000.
Hull, Judd R., to Raymond International, Inc. Expansive base pile construction. 3,691,776, Cl. 61-53.000.
Hulle, Robert M.; Steward, Jerry L.; and Borman, Merle D., to Litton Systems Inc. Rotational shaft encoder having a bearing tube having a slot therein. 3,693,024, Cl. 250-231.0se.
Hurco Manufacturing Company, Inc.: *See—*
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Hydrocarbon Research, Inc.: *See—*
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Iannucci, Vincent A.; and Schartel, Ronald S., to North American Rockwell Corporation. Yarn feeding means for circular knitting machines. 3,691,795, Cl. 66-132.00r.
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Ice, Charles O. Jr.; Ice, Lanny G.; and Frazer, Walter S., to Hydro-Vel Services, Inc. Tube plugging tool. 3,691,609, Cl. 29-252.000.
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Iida, Yozo, to Nippon Kogaku K.K. Motion picture camera capable of automatic overlap photographing. 3,692,395, Cl. 352-217.000.
Iijima, Nobuaki; and Takahashi, Tohru, to Iwatsu Electric Co., Ltd. Semi-balanced amplifier. 3,693,108, Cl. 330-21.000.
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Industrial Nucleonics Corporation, mesne: *See—*
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Ingold, Werner, to Proton AG. Measuring instrument equipped with removable measured value transmitter probe. 3,691,846, Cl. 73-432.00r.
Ingram, Maurice S. Lathe tool holder. 3,691,883, Cl. 82-34.00r.
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Inoue, Kiyoshi: *See—*
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Jaecklin, Andre, to Aktiengesellschaft Brown, Boveri & Cie. Apparatus for electronically measuring the angle of rotation of the polarization plane of a linearly polarized light beam produced by passage of the beam through a magneto-optical element subjecte to a magnetic field to be measured. 3,693,083, Cl. 324-96.000.

Jager, Heinz, to Wedag Westfalia Dinnendahl Groppel Aktiengesellschaft. System and method of controlling a high-discharge comminuting or pulverizing mill, such as a tube mill. 3,692,247, Cl. 241-30.000.

James, Cyril P.; and Washchynsky, Bohdan, to North American Rockwell Corporation. Flat adjusting and throw-off arrangement for form roller in printing press. 3,691,956, Cl. 101-247.000.

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Jefferson Chemical Company, Inc.: *See—*
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Jensen, James L., deceased (by Jensen, Gillian C., administratrix). Read-out and reset control for a memory core. 3,693,188, Cl. 340-174.00r.

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Johnson & Johnson: *See—*
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Johnson, Calvin Keith, to CPC International Inc. Resin coated sand. 3,692,733, Cl. 260-38.000.

Johnson, Carl E., to Nalco Chemical Company. Method for making crystalline zeolite Y. 3,692,475, Cl. 423-329.000.

Johnson, Cecil J., to Total Energy Corporation. High BTU gas content from coal. 3,692,506, Cl. 48-210.000.

Johnson, E. F., Company: *See—*
Bowen, Jack L.; and Ryan, James H., 3,693,132.

Johnson, Ernest W.: *See—*
Norsby, Norrain E.; and Johnson, Ernest W., 3,692,535.

Johnson, Gordon H., to Ferro Corporation. Inorganic lithium-chrome-silicate pigments. 3,692,735, Cl. 260-41.000.

Johnson, Irvin D.; Togneri, Mauro G.; and Kaufmann, Eduard P., to Marathon Oil Company. Computer set point station. 3,693,163, Cl. 340-172.500.

Johnsson, Bo: *See—*
Pettersson, Birger; and Johnsson, Bo, 3,692,096.

Johnston, Carey W. Comprehensive tire pressure differential sensing and indicating device. 3,693,149, Cl. 340-58.000.

Johnston, Edward C.: *See—*
McCoy, Drew E.; Gilmer, William N.; and Johnston, Edward C., 3,692,668.

Johnston, William J.: *See—*
Herod, Donald M.; Engelman, John C.; and Johnston, William J., 3,692,383.

Jones, Charles: *See—*
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Jones, Edward S.: *See—*
Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., 3,692,885.

Jones, Ewart Ray Herbert; Meakins, George Denis; and Clegg, Andres Samuel, to Glaxo Laboratories Limited. Oxidation of steroids. 3,692,629, Cl. 195-51.00r.

Jones, Howard D.: *See—*
Pruitt, Ronnie M.; and Jones, Howard D., 3,692,707.

Jones, Jack W. Borehole orientation tool. 3,693,142, Cl. 340-18.000.

Jones, John L.: *See—*
Gilman, William S.; Jones, John L.; and Rubino, Andrew M., 3,692,811.

Jones, Rufus V.; and Canterino, Peter J., to Phillips Petroleum Company. Process for gelling normally liquid hydrocarbon and product produced. 3,692,504, Cl. 44-7.00e.

Jonsson, Nils Erik Reinhold: *See—*
Liedberg, Kurt Herman; Jonsson, Nils Erik Reinhold; and Svensson, Sten Gunnar Hugo, 3,692,214.

Jordan, Donald J. Flow direction indicator. 3,691,828, Cl. 73-188.000.

Jordan, Frank W.; and Webb, Leonard D., to North American Rockwell Corporation. Stress relieved grains. 3,691,955, Cl. 102-99.000.

Jorgensen, Howard E.: *See—*
Schneiter, Fred E.; Jorgensen, Howard E.; and Davis, Leland E., 3,692,495.

Joslyn Mfg. and Supply Co.: *See—*
Yonkers, Edward H., 3,692,921.

Josten, Friedrich; Lucker, Wilhelm; Meyer-Stoll, Hans Albrecht; and Von Minden, Wolfgang, to Deutsche Texaco Aktiengesellschaft. Thermosetting bonding agents. 3,692,721, Cl. 260-29.300.

Jovic, Nikola L., to International Telephone and Telegraph Corporation. Multi-stage electronic switching network. 3,692,949, Cl. 179-18.0gf.

Joyce, Michael F., to North American Philips Corporation. Solid-state relay using light-emitting diodes. 3,693,060, Cl. 317-262.00r.

Jurany, Gyorgy; Koman, Andras; and Zillich, Pal, to Medicor Muvek. Apparatus for determining the hemoglobin content and hematogrit ratio of blood samples. 3,692,410, Cl. 356-40.000.

K-D Manufacturing Company: *See—*
McFarland, Frederick R.; and Diffenderfer, Walter L., 3,691,640.

Kaaus, Johann, to Keller & Knappich GmbH. Apparatus for dampening garbage in a garbage loading truck. 3,691,648, Cl. 34-227.000.

Kabbe, Hans-Joachim: *See—*
Von Konig, Anita; Kabbe, Hans-Joachim; Mader, Helmut; Otto, Rigobert; and Reuss, Helmut, 3,692,527.

Kabel-und Metallwerke Gutehoffnumgshutte Aktiengesellschaft: *See—*
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Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kabushiki Kaisha Hattori Tokeiten: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Suwa Seikoshi: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisskusho: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kabushikikaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.): *See—*
Tomota, Miyaji; Ishikawa, Yutaka; Yamasaki, Hiroo; and Kurita, Yoshio, 3,691,830.

Kacmarcik, Thomas J.: *See—*
Southam, Donald L.; Weigl, William; and Kacmarcik, Thomas J., 3,691,948.

Kado, Masaru: *See—*
Nishimura, Tatsumi; Nagasawa, Sumio; Shinohara, Hiroshi; and Kado, Masaru, 3,692,902.

Kahle, Wilhelm Manfred, to Canada, Her Majesty the Queen in the right of, as represented by the Secretary of State. Motor controlled magnetic tape playback machine. 3,693,061, Cl. 318-7.000.

Kahn, Edward J., to Togs, Inc. Two-part-snap-on fastening device. 3,691,597, Cl. 24-108.000.

Kalb, Paul A.: *See—*
Miller, George E.; and Kalb, Paul A., 3,692,006.

Kaldenberg, Henry J., to Maytag Company, The. Liquid discharge device. 3,692,053, Cl. 137-562.000.

Kalman, Gabor U. Optical counting method and apparatus. 3,692,985, Cl. 235-92.0pk.

Kalopissis, Gregoire; Bertrand, Jack; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Hair dye composition and method of dyeing human hair therewith. 3,692,461, Cl. 8-10.000.

Kalotay, Paul Zoltan, to International Telephone and Telegraph Corporation. Pulse system and components thereof. 3,691,838, Cl. 73-231.00m.

Kamalian, Neubar, to United States of America, Navy. Method and apparatus for controlling buoyancy. 3,691,953, Cl. 102-14.000.

Kamborian, Jacob S.: *See—*
Vornberger, Walter, 3,691,575.

Kanamaru, Toshiji; Morita, Katsumi; and Okada, Akio, to Matsushita Electric Industrial Co., Ltd. Apparatus for superimposing an AFC voltage on UHF and VHF tuning voltages for channel selection. 3,693,094, Cl. 325-461.000.

Kandiew, Anatoly I., to United States of America, Atomic Energy Commission. Computer diagnostic with inherent fail-safety. 3,692,989, Cl. 235-153.000.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
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Kanji, Maro: *See—*
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Kao Soap Company, Ltd.: *See—*
Amo, Tadashi; and Nagasawa, Tuneo, 3,692,894.

Kapnoff, Anita L. Box-sox for protecting contents of opened boxes. 3,692,230, Cl. 229-43.000.

Karge, Harold W.: *See—*
Hiller, Carl Duane; and Karge, Harold W., 3,691,751.

Kasagi, Masanori; and Gunjigake, Koreaki, to Denki Kagaku Kogyo Kabushiki Kaisha. Aqueous dispersion of a copolymer of ethylene and vinyl acetate and heat melting adhesive comprisig same. 3,692,723, Cl. 260-29.60e.

Kase, Hiroshi: *See—*
Nakayama, Kiyoshi; and Kase, Hiroshi, 3,692,628.

Kasper, Joseph G., to Tennant Company. Surface maintenance machine drive. 3,691,579, Cl. 15-83.000.

Kasper, Robert Jerry, to Park-Ohio Industries, Inc. Pivotally movable slab heating unit. 3,692,969, Cl. 219-10.570.

Kasyanov, Grigory Ivanovich: *See—*
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.

Katagiri, Shigenobu; and Yokota, Mitsuhisa, to Tokyo Shibaura Electric Co., Ltd. Elastic fluid turbine system. 3,692,419, Cl. 415.000.

Kats, Mindert: *See—*
Horn, Cornelis Jacob; Kats, Mindert; Marcelinus, Sigibertus; and Van Uffelen, Catherinus, 3,691,934.

Katserswerth, Hans-Peter, to Siemens Aktiengesellschaft. Door assembly for an enclosure having a tight shielding for high frequency emissions. 3,691,688, Cl. 49-394.000.

Katsuren, Roy I.; and Salisbury, Lloyd L., to United States of America, Army. Self-locking clutch. 3,692,161, Cl. 192-8.00r.

Katz, Erich: *See—*
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Katzer, Ernst: *See—*
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Katzman, Allison W.: *See—*
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Kaufman, Warren F., to Philco-Ford Corporation. Fluid flow control apparatus. 3,692,036, Cl. 137-81.500.

Kaufmann, Alfred W. Beverage fountain. 3,691,787, Cl. 62-400.000.

Kaufmann, Eduard P.: *See—*
Johnson, Irvin D.; Togneri, Mauro G.; and Kaufmann, Eduard P., 3,693,163.

Kawabe, Tsuneo, to Aisin Seiki Kabushiki Kaisha. Vehicle brake fluid pressure monitoring system. 3,693,146, Cl. 340-52.00c.

Kawada, Hiroitsu: *See—*
Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; and Uematsu, Sumio, 3,692,562.

Kawai, Yoshihisa, to Minolta Camera Kabushiki Kaisha. Safety system in electrostatic copier. 3,692,401, Cl. 355-3.000.

Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; and Uematsu, Sumio. Coated tablets having plastic particles dispersed in the coating. 3,692,562, Cl. 117-100.00a.

Kazushige, Hirasawa: *See—*
Oku, Takeshi; Kazushige, Hirasawa; and Yoshimitsu, Matsumoto, 3,692,973.

Keilbach, Joseph R.; and Sarli, Vito J., to United Aircraft Corporation. Multi-component propellant jet propulsion. 3,691,769, Cl. 60-217.000.

Keith, Carl D.; Mooney, John J.; and Vanmansart, Louis J., to Engelhard Minerals & Chemicals Corporation. Catalytic exhaust gas treatment apparatus. 3,692,497, Cl. 23-288.00r.

Keller & Knappich GmbH: *See—*
Kaaus, Johann, 3,691,648.

Kelley, Fred W., Jr.; and Lezan, Georges R. E., to General Electric Company. Gating control for a static switching arrangement with improved conduction angle balancing means. 3,693,069, Cl. 323-24.000.

Kelly, Robert G.; Legg, Louis L.; and Ruf, Walter, to St. Regis Paper Company. Valve bag applicator machine. 3,691,715, Cl. 53-3.000.

Kelvey, Harold E.: *See—*
Chase, William B.; Jendrisak, Joseph E.; and Kelvey, Harold E., 3,692,015.

Kember, Bryan F., to Ampex Corporation. Tape positioning apparatus. 3,692,256, Cl. 242-198.000.

Kempf, Raymond Andrew, to Bell Telephone Laboratories, Incorporated. Cable sections with nonmechanical means to effect coupling. 3,693,114, Cl. 333-7.000.

Kendall, Ray E. Vertically adjustable tow bar assembly. 3,692,330, Cl. 280-402.000.

Kennecott Copper Corporation: *See—*
Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., 3,691,832.

Kennedy, Francis V. Process and apparatus for facilitating the landing of a vehicle on a landing surface. 3,693,143, Cl. 340-27.0na.

Kennedy Valve Mfg., Co., Inc.: *See—*
Dashner, James William, 3,692,042.

Kenner, Bernard A., to Electronic Memories and Magnetics Corporation. Read and write systems for 2 1/2D core memory. 3,693,176, Cl. 340-174.0la.

Kenney, William D., to Midland Manufacturing Company, Inc. Hinge locking means for a foldable auxiliary tool frame. 3,692,121, Cl. 172-456.000.

Kenyon, Richard L.: *See—*
Hickey, William G.; and Kenyon, Richard L., 3,691,730.

Kerekes, Bela, to Egyesult Izzolampa Es Villamossagi Reszveny-Tarsasag. Oxide cathode for an electric discharge device. 3,693,007, Cl. 313-318.000.

Kern, Forrest L., to Commercial Solvents Corporation. Explosive cartridge. 3,691,954, Cl. 102-24.000.

Kerr, Edwin R.: *See—*
Mather, William B., Jr.; and Kerr, Edwin R., 3,692,646.

Kerst, Herman: *See—*
Stamm, James K.; Loder, Edwin R.; Brungs, Charles A.; and Kerst, Herman, 3,692,704.

Kersten, Daniel D. Growing doll fingernails. 3,691,679, Cl. 46-163.000.

Kersten, Samuel D., Jr.; Sautter, Alton F.; and Simon, John M., to Water Saver Faucet Co. Vandal proof valve control assembly. 3,692,046, Cl. 137-382.000.

Kerti, Joseph A., to I-T-E- Circuit Breaker(Canada) Limited. Flexible sealed housing for isolated phase bus. 3,692,923, Cl. 174-84.00s.

Keyman, Jacobus M.; and Maschke, Arnold E., to Mobil Oil Corporation, mesne. Aqueous dispersion of a compatibilized reaction product formed by heat reacting a fatty acid ester adduct with a polyamide. 3,692,714, Cl. 260-18.0pn.

Kezerian, Charles, to Stauffer Chemical Company. Certain substituted phosphorus containing alkyl thio methyl carboxylates and their uses as insecticides and acaricides. 3,692,901, Cl. 424-212.000.

Kichline, Thomas P.; and Scharpf, Lewis G., to Monsanto Company. Composition for preparing process cheese. 3,692,630, Cl. 195-63.000.

Kiela, Gene F.; and Radzins, Edmund, to Joa, Curt G., Inc. Stacking machine with mechanism for displacing stacked workpieces at spaced intervals. 3,691,915, Cl. 93-93.00k.

Kienders, Henricus A. A.: *See—*
DeRooy, Michael A.; Logemann, Johan D.; and Kienders, Henricus A. A., 3,691,729.

Killian, Charles R.: *See—*
Brewer, Charles C.; and Killian, Charles R., 3,692,858.

Kim, Chang Soo; and Palmer, Gerald G., to General Electric Company. Method of fabricating composite integrated circuits. 3,691,628, Cl. 29-577.000.

Kim, Young Chul: *See—*
Kubanek, Anne-Marie Margaretha; and Kim, Young Chul, 3,692,775.

Kimber, Erich Voldemar; and Lewkowicz, Josef. Feed device for a rock drill. 3,692,124, Cl. 173-160.000.

Kimberly-Clark Corporation: *See—*
Duchane, David V., 3,692,725.
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Kimoto, Jitsumi: *See—*
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Kimura, Hiroshiro; Nambu, Takeshi; Inoue, Kiyoshi; Imahori, Yoshiyuki; Yamaguchi, Kenjyo; and Umeno, Kyozo. Curved projection screens. 3,692,384, Cl. 350-119.000.

Kimura, Yasuo, to Kanegafuchi Boseki Kabushiki Kaisha. Lining for shoes. 3,692,623, Cl. 161-159.000.

Kindis, Eugen, to Kabel-und Metallwerke Gutehoffnumgshutte Aktiengesellschaft. High voltage electrical cable. 3,692,925, Cl. 174-120.000.

Kinesonic Industries Ltd.: *See—*
Siegel, Morton A., 3,692,390.

King, Randall N., to General Electric Company. Sealed electrochemical cell with an electrolytic solution containing an electrolyte and a dissolved fuel. 3,692,584, Cl. 136-83.00r.

Kinley, John C. Method of expanding a liner. 3,691,624, Cl. 29-523.000.

Kinnison, Charles G.: *See—*
Arnold, Bruce C.; Auman, John T., Jr.; Kinnison, Charles G.; and Lantz, James E., 3,692,157.

Kipps, Harry J.; and Doniguian, Thaddeus M., to Signal Oil and Gas Company. Cathodic protection system. 3,692,650, Cl. 204-147.000.

Kirkegard, Neil Jr.: *See—*
Lania, Anthony R.; and Kirkegard, Neil Jr., 3,692,702.

Kirkwood, Creal E. Multi-port valve having improved seal retaining means. 3,692,056, Cl. 137-625.430.

Kirsch, Albert, to Instant Brick Enterprises, Inc., mesne. Wall surfacing die for simulating building blocks. 3,692,458, Cl. 425-459.000.

Kirsch, Werner: *See—*
Wedekind, Benno; and Kirsch, Werner, 3,692,619.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Exposure time changeover device for cameras or shutters. 3,691,923, Cl. 95-53.0eb.

Kiwiet, William B., to Tektronix, Inc. Numerical control system dependent on vector magnitude. 3,693,064, Cl. 318-571.000.

Klaue, Hermann. Variable speed hydraulic transmission. 3,691,869, Cl. 74-740.000.

Klebert, Wolfgang: *See—*
Meisert, Ernst; Striegler, Hellmut; Koch, Hans-Joachim; and Klebert, Wolfgang, 3,692,708.

Klehm, William G., Jr., to Burroughs Corporation. Progammable dual-in-line pin connector for integrated circuit units. 3,693,131, Cl. 339-17.0cf.

Klein, Harold L. Meat ball forming machine. 3,691,594, Cl. 17-32.000.

Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. Active tuned circuit. 3,693,105, Cl. 330-12.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Decker, Hanns; Hurtmanns, Heinz; and Stockmann, Helmut, 3,692,249.
Klotzer, Erhard; and Clas, Willi, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Process of making a rubber composition for adhering rubbers and textiles. 3,692,734, Cl. 260-38.000.
Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil & Refining Company. Dehydrogenation and dehydrocyclization method. 3,692,863, Cl. 260-683.300.
Knapsack Aktiengesellschaft: *See—*
Seifert, Helmut; Stephan, Hans Werner; and Dorn, Friedrich Wilhelm, 3,692,917.
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; and Lork, Winfried, 3,692,829.
Knavish, Leonard A.: *See—*
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Kniege, Wilfried: *See—*
Degen, Bruno; Goller, Heinz; Kniege, Wilfried; Noll, Walter; and Buchner, Werner, 3,692,732.
Kniepkamp, Glenn E., to U.S. Steel Corporation. Method and apparatus for overlaying weld metal which prevents the emission of noxious gases therefrom. 3,692,971, Cl. 219-73.000.
Knierim, Vincent L. Mini-micron particle separation system. 3,691,735, Cl. 55-391.000.
Knight, Patrick E.; and Stapleton, Raymond D., to General Electric Company. Test arrangement for data modem. 3,692,939, Cl. 179-2.0dp.
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit. Method of manufacturing silicon carbide whisker. 3,692,478, Cl. 23-208.00a.
Knitter, Heinz: *See—*
Assmus, Fritjof Hans; and Knitter, Heinz, 3,693,139.
Knoll, Ronald S., to Admiral Corporation. X-Radiation protection circuit. 3,692,933, Cl. 178-7.50r.
Knorr-Bremse KG: *See—*
Baronnet, Pierre; and Katzer, Ernst, 3,692,275.
Kobayashi, Ikuya: *See—*
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Kobayashi, Isamu, to Sony Corporation. Method of forming seeding sites on a semiconductor substrate. 3,692,574, Cl. 117-212.000.
Kobayashi, Toyoaki; Mori, Yoshinori; and Aiki, Shiego, to Aishin Seiki Kabushiki Kaisha. Spot-type disk brake. 3,692,151, Cl. 188-72.500.
Kobe Steel, Ltd.: *See—*
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Kobelentz, Otto: *See—*
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Koch, H., & Sons, Inc.: *See—*
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Koch, Hans-Joachim: *See—*
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Kockum-Soderhamn Aktiebolag: *See—*
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Kohl, Robert F.; and Heian, Glenn A., to Allis-Chalmers Manufacturing Company. Method and apparatus for removing alkali from cement system. 3,692,287, Cl. 263-32.00r.
Kohlenberger, Inc.: *See—*
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Kohls, James L. Litter collector and receptacle. 3,692,072, Cl. 141-391.000.
Kohsaka, Masanobu: *See—*
Arima, Kei; Tamura, Gakuzo; Sakai, Heiichi; and Kohsaka, Masanobu, 3,692,777.
Kolbel, Herbert; Manecke, Georg; and El-Ghatta, Hussain Kashif, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of insoluble synthetic products on the basis of epoxy compounds containing urethane groups. 3,692,729, Cl. 260-30.4e.
Koleske, Joseph Victor: *See—*
Phillips, Benjamin; Pollart, Dale Flavian; and Koleske, Joseph Victor, 3,692,023.
Koman, Andras: *See—*
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Komiya, Kuniko: *See—*
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Konig, Gottfried; and Schornstadt, Peter, to VEB Pentacon Dresden Kamera- und Kinowerke. Method and apparatus of contrast-dependent sharp focussing. 3,691,922, Cl. 95-44.00r.
Konig, Klaus: *See—*
Traubel, Harro; and Konig, Klaus, 3,692,570.
Konishiroku Photo Industry Co., Ltd.: *See—*
Uchida, Yasuo; and Kuroyanagi, Yoshitaka, 3,691,917.
Konno, Akira; and Kosaka, Tomoaki, to Pioneer Electronic Corporation. Timer of an automatic telephone answering apparatus. 3,692,940, Cl. 179-6.000.
Konort, Mark D.: *See—*
Lamberti, Vincent; Konort, Mark D.; and Weil, Ira, 3,692,685.
Kopelev, Fridrikh Lvovich. Precision boring machine. 3,692,418, Cl. 408-8.000.
Koral, Jerry Norman: *See—*
Blank, Werner Josef; and Koral, Jerry Norman, 3,692,717.
Kornstein, Irving. Method and apparatus for making a metalized indicium. 3,692,610, Cl. 156-249.000.
Korolkov, Ivan Alexandrovich: *See—*
Astafiev, Georgy Vasilievich; Korolkov, Ivan Alexandrovich; and Ozhgikhin, Anatoly Nikolaevich, 3,692,224.
Kosaka, Tomoaki: *See—*
Konno, Akira; and Kosaka, Tomoaki, 3,692,940.
Kostur, Robert E., to Comet Industries, Inc. Gas-fired thermoforming machine. 3,692,288, Cl. 263-40.00r.
Kovach, Stephen M.: *See—*
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Koyama, Tadataka: *See—*
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Koyanagi, Hironobu: *See—*
Okada, Hiroshi; Osakada, Atsushi; Minami, Satoyuki; Aoki, Toshikazu; Hisamori, Tetsuo; Koyanagi, Hironobu; and Otsuka, Hiromi, 3,692,602.
Kraftco Corporation: *See—*
Mauk, Robert R., 3,692,540.
Krause, Konrad A.; and Moradzadeh, Yaqub, to International Business Machines Corporation. Apparatus for transferring developed image. 3,691,993, Cl. 118-637.000.
Kravitz, Stanley: *See—*
Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, 3,692,695.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Catalyst for hydrocarbon conversion. 3,692,694, Cl. 252-439.000.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Catalyst for hydrocarbon conversion. 3,692,696, Cl. 252-439.000.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Fluorided metal-alumina catalysts. 3,692,697, Cl. 252-439.000.
Kressel, Henry: *See—*
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Kreuder, Hans-Joachim: *See—*
Rosenkranz, Hans-Jurgen; Rudolph, Hans; and Kreuder, Hans-Joachim, 3,692,560.
Kreuter, Kenneth G., to Robertshaw Controls Company. Pneumatically operated actuator. 3,691,906, Cl. 91-222.000.
Krohn, Ivar T.; and Page, Geoffrey A., to Xerox Corporation. Manifold imaging method. 3,692,516, Cl. 96-1.00r.
Krokos, Raymond M.; and MacCurdy, William K., to Evans Products Company. Method and apparatus for shipping motor vehicle. 3,691,963, Cl. 105-368.00r.
Kroll, Frederick H. Expandable doll house. 3,691,671, Cl. 46-12.000.
Kronas, Nicholas T.; and Ehrich, Robert W., to Estad Products, Inc. Positional adjustment device for casket beds. 3,692,267, Cl. 248-288.000.
Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter Erich, to Messerschmitt-Bolkow-Blohm GmbH. Three-dimensional storage system. 3,693,169, Cl. 340-173.00r.
Kruger, Erwin, to Ludwig Verpackungen Zach. Apparatus for making hollow plastic articles. 3,692,454, Cl. 425-355.000.
Krusche, Kurt R. Two-sided handle brush. 3,691,586, Cl. 15-106.000.
Krutsinger, Ralph W., Jr.: *See—*
Shelton, James D., 3,691,901.
Kubanek, Anne-Marie Margaretha; and Kim, Young Chul, to Allied Chemical Corporation. Racemization of D- or L-A-amino-caprolactam in the presence of metal ions. 3,692,775, Cl. 260-239.30r.
Kubitzek, Konrad. Progressive form apparatus for concrete construction. 3,692,445, Cl. 425-63.000.
Kubo, Moritada; and Arimura, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Method for detecting the position and direction of a fine object. 3,693,154, Cl. 340-146.30h.
Kuchyt, Charles, to Hercules Manufacturing Company, Inc. Shearing machine. 3,691,890, Cl. 83-624.000.
Kudinov, Gennady Alexandrovich: *See—*
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.
Kuhlmann, Josef H. Egg gathering mechanism. 3,692,169, Cl. 198-43.000.
Kuhnle, Paul, to Fr. Hesser Maschinenfabrik AG. Heat seal tool. 3,692,611, Cl. 156-358.000.
Kukin, Ira, to Apollo Chemical Corporation. Activated manganese containing additive for fuels. 3,692,503, Cl. 44-4.000.
Kulbersh, Irwin R.: *See—*
Ferdinand, Irwin J.; Kulbersh, Irwin R.; and Cassiere, Gerald D., 3,691,966.
Kulig, Frank M., to Ney, J. M., Company. Method and apparatus for investment casting. 3,692,088, Cl. 164-62.000.
Kumiai Chemical Industry Co., Ltd.: *See—*
Nishimura, Tatsumi; Nagasawa, Sumio; Shinohara, Hiroshi; and Kado, Masaru, 3,692,902.
Kummer, Charles K., to Ralston Purina Company. Sample cartridge filling and closing apparatus. 3,691,723, Cl. 53-271.000.
Kummerlin, Nikolaus Adalbert: *See—*
Kummerlin, Walter; and Kummerlin, Nikolaus Adalbert, 3,692,143.
Kummerlin, Walter; and Kummerlin, Nikolaus Adalbert. Extensible ladder. 3,692,143, Cl. 182-24.000.
Kundert, Robert L., to Drain-Away, Inc. Roof draining systems. 3,692,040, Cl. 137-142.000.
Kupfer-Asbest-Co. Gustav Bach: *See—*
Augustin, Gustav, 3,692,317.
Kurimoto, Mikishi; Ochiai, Yoshiki; Munekata, Keniti; and Nomura, Kenji, to Toyoda Koki Kabushiki Kaisha. Machine tool with tool change device. 3,691,655, Cl. 29-568.000.

Kurita, Masahiro, to Kabushiki Kaisha Suwa Seikoshi. Electric or electronic timepice. 3,691,753, Cl. 58-23.00r.

Kurita, Yoshio: *See—*
Tomota, Miyaji; Ishikawa, Yutaka; Yamasaki, Hiroo; and Kurita, Yoshio, 3,691,830.

Kurokawa, Ikuji: *See—*
Matsuura, Hideo; Kurokawa, Ikuji; and Murase, Yoshihiko, 3,691,892.

Kurokawa, Noriyuki; and Minami, Hiroshi, to Hitachi, Ltd. Decimal point processing system dealing with overflow. 3,692,990, Cl. 235-159.000.

Kuromitsu, Hiromu, to Aisin Seiki Kabushiki Kaishi. Braking force control valve assembly. 3,692,367, Cl. 303-52.000.

Kuroyanagi, Yoshitaka: *See—*
Uchida, Yasuo; and Kuroyanagi, Yoshitaka, 3,691,917.

Kurtin, Stephen L.: *See—*
De Vaux, Lloyd H.; and Kurtin, Stephen L., 3,693,011.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Watanabe, Ichiro, 3,692,778.

Kushnir, Bud William: *See—*
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Kutsykovich, Dorina Borisovna: *See—*
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovsky, Jury Bortsovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.

Kuvshinov, Vladimir Zakharovich: *See—*
Grinchenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavoich; Goldshtein, Jury Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich, 3,693,077.

Kuwada, Yutaka: *See—*
Meguro, Kanji; Tawada, Hiroyuki; Kuwada, Yutaka; and Masuda, Toru, 3,692,772.

Kuzmenko, Ivan Emelyanovich: *See—*
Fridman, Uriel Grigorievich; Mor, Gera Sergeevna; Skadynsh, Rolands Bernkhardovich; and Kuzmenko, Ivan Emelyanovich, 3,691,885.

Kwiatkowski, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Apparatus for treating roll film or the like in liquid baths. 3,691,926, Cl. 95-94.00r.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakayama, Kiyoshi; and Kase, Hiroshi, 3,692,628.
Terada, Osamu, 3,692,632.

La Barbera, Robert R., to Thompson, Wm. T., Co. Composition and method for inhibiting growth of plant pathogens. 3,692,916, Cl. 424-346.000.

La Barge, Inc.: *See—*
Nye, Eugene A., 3,692,924.

La Cellophane: *See—*
Weber, Guy Paul, 3,692,409.

La Marre, David A.; Schauweker, George H.; and Stickney, Herbert F., to American Optical Corporation. Protective garment. 3,691,564, Cl. 2-2.000.

La Raus, Sadye R.: *See—*
LaRaus, Julius, 3,692,180.

Laabs, Johannes: *See—*
Holtrup, Bernhard; and Laabs, Johannes, 3,691,775.

Labussiere, Andre Julien; and Leon, Joseph Henri, to Avions Marcel Dassault. Method of and means for noise attenuation. 3,692,141, Cl. 181-33.00e.

Lacombat, Michel: *See—*
Marcy, Raymond; Bouygues, Jean; and Lacombat, Michel, 3,692,413.

Ladine, Duane A. Data monitoring servo. 3,691,845, Cl. 73-432.000.

Laguzzi, Umberto. Benzylisoquinolinic solutions and method of making the same. 3,692,910, Cl. 424-258.000.

Laigle, Roger E.; and Rakich, Antone F., to Anaconda American Brass Company. Adjustable guide for a moving sheet. 3,692,223, Cl. 226-199.000.

Lake, Alvin E., Jr.; and Mercer, Allen C., to Eastman Kodak Company. Web inspection system using interlaced photocells. 3,693,021, Cl. 250-219.0df.

Lake, Edward E., to Clark Equipment Company. Hydraulic lift truck with small number of fluid lines. 3,692,198, Cl. 214-653.000.

Lamberti, Vincent; Konort, Mark D.; and Weil, Ira, to Lever Brothers Company. Detergent compositions. 3,692,685, Cl. 252-89.000.

Laminated Wood Products Co.: *See—*
Huling, Fred W., Jr., 3,691,929.

Lamison, Vernon L.: *See—*
Byrns, Robert E.; Gouldthorpe, Hugh W.; and Lamison, Vernon L., 3,693,117.

Lamp, Paul F., to Electone, Inc. Digital hearing aid gain analyzer. 3,692,959, Cl. 179-175.10a.

Lancaster, Jesse F., to Cooke Engineering Company, The. Multi-circuit patch plug and jack. 3,692,966, Cl. 200-51.100.

Landen, Ernest W.: *See—*
Ryberg, John G.; and Landen, Ernest W., 3,691,762.

Landers, Don B., to Oil States Ruther Co. Disc supported cup. 3,691,584, Cl. 15-104.06r.

Landis Tool Company, mesne: *See—*
Clark, Wilbur R.; and Mann, Freeman W., 3,691,701.

Lania, Anthony R.; and Kirkegard, Neil Jr., to Chase Corporation. Semiconductive contact adhesive. 3,692,702, Cl. 252-511.000.

Lannion, Rene Francois: *See—*
Le Strat, Guy Jean; Lannion, Rene Francois; and Satie, Pierre-Louis Joseph, 3,692,961.

Lantz, James E.: *See—*
Arnold, Bruce C.; Auman, John T., Jr.; Kinnison, Charles G.; and Lantz, James E., 3,692,157.

Lappin, Kenneth R.: *See—*
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,691,634.

LaRaus, Julius, to La Raus, Sadye R. Countertop water purifier. 3,692,180, Cl. 210-139.000.

Lark Luggage Corporation: *See—*
Laurita, Joseph N., 3,692,155.

Larrison, Millard S.: *See—*
Rattenbury, Kenneth H.; and Larrison, Millard S., 3,692,879.

Larsen, Charles A.: *See—*
Mousseau, Daniel J.; and Larsen, Charles A., 3,691,626.

Larsen, John, to Fyens Saekkekom-pagni A/S. Method of and apparatus for filling a tube or a hose with a solid material, preferably sand. 3,692,070, Cl. 141-1.000.

Larson, Alworth D.; Braymer, Hugh D.; and Broussard, Evest A., III, to Research Corporation. Method for bacterial proteinase. 3,692,631, Cl. 195-66.00r.

Larson, Louis P.; Repking, Edward F.; and Wagner, Gary L., to Crown Zellerbach Corporation. Pallet. 3,691,964, Cl. 108-51.000.

Larsson, Karl Bertil, to Svenska Aktiebolaget Bromsregulator Malmo. Slack adjuster connection arrangement. 3,692,152, Cl. 188-79.50k.

Laser Products & Development Corporation, Inc.: *See—*
Schneider, Joseph R.; and Schneider, Bruce A., 3,691,894.

Lasher, George D. Portable fluid gauge. 3,691,839, Cl. 73-322.000.

Latrobe Steel Company: *See—*
Fletcher, Stewart G.; and Haswell, Walter T., Jr., 3,692,515.

Laudato, Gaetano J., Jr. Self-powered signal buoy. 3,691,573, Cl. 9-8.30e.

Lauer, Karl; and Stephan, Peter. Process and apparatus for the continuous production of solutions. 3,692,579, Cl. 127-22.000.

Laughlin, Gerald J., to Singer Company, The, mesne. Positioning mechanism. 3,692,268, Cl. 248-346.000.

Laur, Thomas L., to Dow Corning Corporation. Stable polydiorganosiloxane gums. 3,692,737, Cl. 260-45.75r.

Laurens, Marc: *See—*
Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, 3,692,524.

Laurita, Joseph N., to Lark Luggage Corporation. Handle assembly. 3,692,155, Cl. 190-57.000.

Laval, Paul Marie Georges, to Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "Cockerill". Plant for recovering energy from exhaust gases from a back-pressure blast furnace. 3,691,793, Cl. 60-39.500.

Law, John E.; and Cheesman, Donald C., to Williams Patent Crusher & Pulverizer Company, Inc. Fluff preparation system and apparatus. 3,692,246, Cl. 241-28.000.

Layne, Arnold B., to Sweeney, B. K., Manufacturing Co. Cylinder-liner pulling tools. 3,691,612, Cl. 29-266.000.

Lazarev, Anatolij: *See—*
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Le Corre, Jean-Pierre: *See—*
Durteste, Bernard Pierre; Henrion, Michel Andre Robert; and Le Corre, Jean-Pierre, 3,692,944.

Le Corre, Yvette Marie Laurence: *See—*
Durteste, Bernard Pierre; Henrion, Michel Andre Robert; and Le Corre, Jean-Pierre, 3,692,944.

Le Strat, Guy Jean; Lannion, Rene Francois; and Satie, Pierre-Louis Joseph, to International Standard Electric Corporation. Telephone call simulator. 3,692,961, Cl. 179-175.20r.

Lear Siegler Incorporated: *See—*
Homier, Robert I.; and Posh, Raymond C., 3,692,271.

Lebrizz, Joseph M.: *See—*
Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., 3,691,832.

Lebzelter, Joseph, to United States of America, Army. Monitoring system for pneumatic cylinder. 3,691,902, Cl. 91-1.000.

Lechler, Rolf; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH. Liquid cooled housing for rotary piston engines. 3,691,999, Cl. 123-8.01.

Lecoanet, Roland S.; and Lepagnol, Jean A. H., to International Standard Electric Corporation. System for recording and connecting waiting calls on a chronological basis. 3,692,950, Cl. 179-27.00d.

Lee, Donald S.; and Settanni, Richard, to Leesona Corporation. Coil winding machine. 3,692,250, Cl. 242-7.080.

Lee, Ernest O., Jr.: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,692,946.

Lee, James F. Tool holding device. 3,691,574, Cl. 10-89.00h.

Leeds & Northrup Company: *See—*
Walsh, Thomas J., 3,693,067.

Lees, Harold D.; Evans, Paul F.; Maltz, Martin S.; and Vipond, Edward W., to Xerox Corporation. Electrolytic reversible color display device. 3,692,659, Cl. 204-224.000.

Leesona Corporation: *See—*
Lee, Donald S.; and Settanni, Richard, 3,692,250.

Legg, Louis L.: *See—*

Kelly, Robert G.; Legg, Louis L.; and Ruf, Walter, 3,691,715.

Lehnert, Gunter: *See—*
Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut, 3,692,554.

Lemelson, Jerome H. Toy vehicle and track. 3,691,670, Cl. 46-1.00j.

Lemelson, Jerome H. Casting and molding method. 3,692,892, Cl. 264-317.000.

Lemke, James U., to Bell & Howell Company. Magnetic printing utilizing thermal gradients. 3,693,183, Cl. 346-74.0mt.

Lemmons, Willie Paul. Scholastic averaging devices. 3,691,651, Cl. 35-48.00r.

Lemoine, Jacques: *See—*
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,691,760.

Lengick, Guenther Fritz. Room temperature curable organopolysiloxanes and process for preparing same. 3,692,865, Cl. 260-826.000.

Lense, Robert F.; and Zimmer, Richard C., to Riegel Paper Corporation. Continuous motion packaging machine for cartons with sealing tapes. 3,691,724, Cl. 53-284.000.

Lenzen, Kenneth H.: *See—*
Bowling, George W.; Conlisk, Peter J.; and Lenzen, Kenneth H., 3,691,712.

Leon, Joseph Henri: *See—*
Labussiere, Andre Julien; and Leon, Joseph Henri, 3,692,141.

Leonard, Didier, to C.I.T.-Compagnie Industrielle des Telecommunications. Apparatus for establishing a telephone to radio-telephone communication. 3,692,952, Cl. 179-41.00a.

Leonhauser, Senta: *See—*
Reinicke, Hans; Leonhauser, Senta; and Weidenhagen, Rudolf, 3,692,766.

Lepagnol, Jean A. H.: *See—*
Lecoanet, Roland S.; and Lepagnol, Jean A. H., 3,692,950.

Lersmacher, Bernd; Lydtin, Hans Jurgen; and Wilden, Rolf Josef. Method of depositing substances from the gas phase. 3,692,565, Cl. 117-106.00r.

Lesh, Sol: *See—*
Frank, Morton E.; Gross, Jesse; and Lesh, Sol, 3,692,498.

Lester, Corrsin; and Ewing, Joan R. Strippable layer relief printing. 3,692,404, Cl. 355-9.000.

Lever Brothers Company: *See—*
Lamberti, Vincent; Konort, Mark D.; and Weil, Ira, 3,692,685.

Levy, Hilton B., to United States of America, Health, Education and Welfare. Inhibition of transplanted tumor growth by polyinosinic-polycytidylic acid in mice. 3,692,899, Cl. 424-180.000.

Levy, Kenneth: *See—*
Friedman, David; and Levy, Kenneth, 3,693,066.

Levy, Selden; Grant, Stuart; Coryell, Vincent; and Diamond, Fred. Visual effects for music. 3,692,389, Cl. 352-5.000.

Lewis, Richard L.: *See—*
Ewald Jerome T.; Bach, Lloyd G.; and Lewis, Richard L., 3,692,039.

Lewis, Theras Gordon, to Bell Telephone Laboratories, Incorporated. Time division switching system conference circuit. 3,692,947, Cl. 179-18.0bc.

Lewkowicz, Josef: *See—*
Kimber, Erich Voldemar; and Lewkowicz, Josef, 3,692,124.

Leyland, Boris Nicholas: *See—*
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Leyland Gas Turbines Limited: *See—*
Barnard, Mark Cary Sedgwick, 3,692,098.
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Lezan, Georges R. E.: *See—*
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Liang, Po-Lung; and Pierce, Staley L., Jr., to Ford Motor Company. Two-stage positive displacement pump. 3,692,432, Cl. 417-286.000.

Libbey-Owens-Ford Company: *See—*
Weaver, William R., 3,692,551.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Beneking, Heinz, 3,693,055.
Hilberg, Wolfgang, 3,693,159.

Lichtenwalter, Myrl; and Yeakey, Ernest Leon, to Jefferson Chemical Company, Inc. Method for preparation of aminoethylpiperazine. 3,692,789, Cl. 260-268.0sy.

Liedberg, Kurt Herman; Jonsson, Nils Erik Reinhold; and Svensson, Sten Gunnar Hugo, to Atlas Copco Aktiebolag. Method and means for controlling the delivery of liquid to spray guns. 3,692,214, Cl. 222-334.000.

Liepelt, Donald W.: *See—*
Conners, John A.; Liepelt, Donald W.; and Baulieu, William H., 3,692,276.

Lightner, Max W., to United States Steel Corporation. Apparatus for atomizing molten metal. 3,692,443, Cl. 425-7.000.

Lill, Melvin H.: *See—*
May, George; and Lill, Melvin H., 3,692,081.

Lincoln, Milan L., to Motorola, Inc. Semiconductor device fabrication apparatus. 3,692,225, Cl. 228-4.000.

Lincoln, Roland L., to Fuller Company. Spray nozzle for gas scrubbers. 3,692,244, Cl. 239-419.000.

Lindberg, Ulf Henrik Anders, to Aktiebolaget Astra. N-(phenylalkyl)-acylamide derivatives. 3,692,784, Cl. 260-247.200.

Lindelof, Leonard A.; and Linn, Albert L., to Longyear, E. J., Company. Chuck apparatus. 3,692,320, Cl. 279-4.000.

Lindgren, George V. Tool post. 3,691,884, Cl. 82-36.000.

Lindle, Rodger M.: *See—*
Dearth, Robert L.; and Lindle, Rodger M., 3,692,539.

Linn, Albert L.: *See—*
Lindelof, Leonard A.; and Linn, Albert L., 3,692,320.

Liston, Thomas V., to Chevron Research Company. Dispersion of terephthalic acid in detergent containing hydrocarbon oil medium. 3,692,681, Cl. 252-51.50a.

Little, Edwin D.: *See—*
Cheema, Zafarullah K.; Apice, Pawquale J.; and Little, Edwin D., 3,692,845.

Little, Glen Melvon. Swimming pool for horses. 3,691,995, Cl. 119-29.000.

Little, Miller, Giant Co., Inc.: *See—*
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Litton Systems Inc.: *See—*
Hulle, Robert M.; Steward, Jerry L.; and Borman, Merle D., 3,693,024.
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Litzler, Alfred: *See—*
Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, 3,692,462.
Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, 3,692,463.

Livshitz, Stanley L.; and Mayo, Robert Alan, to Technicon Instruments Corporation. Self-balancing centrifuge method and apparatus. 3,692,236, Cl. 233-26.000.

Ljung, Bo Hans Gunnar, to AGA Aktiebolag. Gyro arrangement. 3,691,852, Cl. 74-5.000.

LKB-Produkter AB: *See—*
Forsstrom, Bo Gosta, 3,691,889.
Svendsen, Per Just, 3,692,654.

Lloyd, William A., to Versatec, Inc. Electrostatic recording head. 3,693,185, Cl. 346-139.00c.

Loder, Edwin R.: *See—*
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Loehr, Clifford E.: *See—*
Benner Floyd E., Jr.; and Loehr, Clifford E., 3,692,055.

Logemann, Johan D.: *See—*
DeRooy, Michael A.; Logemann, Johan D.; and Kienders, Henricus A. A., 3,691,729.

Loliger, Willi; and Schmied, Rudolf, to Alpura AG. Apparatus for sterilizing packaged material. 3,692,468, Cl. 21-58.000.

Lombard, Claude; and Perrin, Jean-Louis, to Regie Nationale des Usines Renault and Automobiles Peugeot. Frequency-responsive control devices, notably for reducing the air pollution caused by petrol engines. 3,691,873, Cl. 74-866.000.

Lombard, Marco Hans: *See—*
Hutchinson, Thomas R.; and Lombard, Marco Hans, 3,693,089.

Long, Ernest L.; and Ring, Charles M. Stable power amplifier circuit. 3,693,106, Cl. .

Long, Ernest L., to Motorola, Inc. Stable power amplifier circuit. 3,693,107, Cl. 330-17.000.

Long, Martin L., Jr.: *See—*
Branovich, Louis E.; Fitzpatrick, William B. P.; and Long, Martin L., Jr., 3,692,566.

Longbottom, Geoffrey Brian: *See—*
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Longoria, Juan, to Dow Chemical Company, The. Paper containing a polylthylenimine-fatty acid epichlorohydrin product. 3,692,092, Cl. 162-164.000.

Longyear, E. J., Company: *See—*
Lindelof, Leonard A.; and Linn, Albert L., 3,692,320.

Lopez, Efrain D.: *See—*
Adams, Ralph D.; and Lopez, Efrain D., 3,691,696.

Lorcher, Otfried; and Steffen, Robert, to Farbwerke Hoechst Aktiengesellschaft. Cellular plastics of polymers of perfluorolefins and process for making them. 3,692,710, Cl. 260-2.50l.

Lorenz, Dietrich: *See—*
Boltze, Karl-Heinz; Brendler, Otfried; and Lorenz, Dietrich, 3,692,818.

Lorenzino, Paul; and Love, Robert G., to Halliburton Company. Temperature compensator. 3,691,841, Cl. 73-362.00r.

Lork, Winfried: *See—*
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Lortz, Russell W.: *See—*
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Losi, Salvatore; Henzi, Rene; and Meyer, Andre, to Sel-Rex Corporation. Electrodeposition of low stress ruthenium alloy. 3,692,641, Cl. 204-43.000.

Love, Robert G.: *See—*
Lorenzino, Paul; and Love, Robert G., 3,691,841.

Lowery, William E., to Control Building Systems, Inc. External corner member. 3,691,711, Cl. 52-282.000.

Lowrance, Thomas F. Apparatus for inserting sticks in articles. 3,691,608, Cl. 29-211.00d.

Lozach, Gerard: *See—*
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LTV Electrosystems, Inc.: *See—*
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Lubrizol Corporation, The: *See—*
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Lucas, Daniel R., Jr.: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
Bottoms, Harry Simister, 3,691,790.
West, John Godfrey Wilson, 3,693,037.
Lucker, Wilhelm: *See—*
Josten, Friedrich; Lucker, Wilhelm; Meyer-Stoll, Hans Albrecht; and Von Minden, Wolfgang, 3,692,721.
Luckey, George R., to TRW Inc. Self-erecting collapsible and foldable tubular beam. 3,691,705, Cl. 52-108.000.
Luderer, Manfred H.; and Ettenhofer, Anton, to Atlas Copco Aktiebolag. Apparatus for spray-coating components. 3,691,991, Cl. 118-629.000.
Ludvik, George F.; and Darlington, Walter A., to Monsanto Company. Compositions and methods for combatting insects of the genus heliothia. 3,692,915, Cl. 424-352.000.
Ludwig Verpackungen Zach: *See—*
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Luftkonditionering AB: *See—*
Persson, Sixten Ismael, 3,691,931.
Luinstra, Wilbert L. Livestock headgate. 3,691,998, Cl. 119-98.000.
Lummis, Robert Carl: *See—*
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Lusk, William A.: *See—*
Hinkley, Clyde E.; and Lusk, William A., 3,691,984.
Lyberger, John Edwin, to Sherwin-Williams Company. Process for removal of polysulfides. 3,692,471, Cl. 23-134.000.
Lydtin, Hans Jurgen: *See—*
Lersmacher, Bernd; Lydtin, Hans Jurgen; and Wilden, Rolf Josef, 3,692,565.
Lynde, Edward A. Safety lock assembly. 3,692,353, Cl. 296-35.00a.
M & T Chemicals Inc.: *See—*
Ackerman, Hervey W., Jr., 3,693,020.
Mac Knight, Merritt L., to Litton Systems, Inc. Associative memory device and system. 3,693,174, Cl. 340-173.0am.
Mac Mullin, Robert B.; Fox, Homer M.; Ruehlen, Forrest N.; and Childs, William V. Electrolytic cell. 3,692,660, Cl. 204-246.000.
MacCurdy, William K.: *See—*
Krokos, Raymond M.; and MacCurdy, William K., 3,691,963.
Mackay, Michael T. Silver recovery. 3,692,291, Cl. 266-22.000.
Mader, Helmut: *See—*
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Magagnoli, Remo: *See—*
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Magerlein, Barney J., to Upjohn Company, The. Process for making lincomycin and analogs thereof and novel compounds obtained thereby. 3,692,767, Cl. 260-210.00r.
Magnavox Electronics Company, Limited, The: *See—*
Goulding, Kenneth Charles, 3,692,315.
Maier, Karl, to International Standard Electric Corporation. Circuit arrangement for telecommunication switching systems employing time-division multiplex operation. 3,692,945, Cl. 179-18.0gf.
Maisenbacher, Dieter, to Nagele, Karl F., Dr., Feinmaschinenbau. Slide fastener. 3,691,599, Cl. 24-205.130.
Makow, David M.: *See—*
Blachut, Theodore J.; Marsik, Zbynek; and Makow, David M., 3,692,406.
Makowsky, Herbert. Toothbrush. 3,691,587, Cl. 15-167.00r.
Maling, Reginald G. Data processing equipment including improved keyboard. 3,693,184, Cl. 346-74.00m.
Mallatt, Russell C.: *See—*
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Maltz, Martin S.: *See—*
Lees, Harold D.; Evans, Paul F.; Maltz, Martin S.; and Vipond, Edward W., 3,692,659.
Mammino, Joseph; and Amidon, Alan B., to Xerox Corporation. Developing electrostatic images employing fatty acid esters to inhibit developer build-up. 3,692,520, Cl. 96-1.200.
Manber, Solomon, to Alphanumeric, Incorporated. Single line scan pattern generator. 3,692,935, Cl. 178-15.000.
Manecke, Georg: *See—*
Kolbel, Herbert; Manecke, Georg; and El-Ghatta, Hussain Kashif, 3,692,729.
Manhart, Sigmund: *See—*
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Marconi Company Limited, The: *See—*
Ellis, Alfred Brian Edwin; and Shead, Colin James, 3,693,170.
Marcy, Raymond; Bouygues, Jean; and Lacombat, Michel, to Thomson-CSF. Systems for accurately positioning an object in a plane by means of translatory movements. 3,692,413, Cl. 356-106.000.
Marineck, Borut, to Swiss Aluminium Ltd. Electrolytic process. 3,692,645, Cl. 204-67.000.
Marinelli, Donald Paul, to RCA Corporation. Method and apparatus for depositing epitaxial semiconductive layers from the liquid phase. 3,692,592, Cl. 148-172.000.
Marker, Hannes: *See—*
Frisch, Hans Otto; and Payrhammer, Bernd, 3,692,322.
Marks, Theodore; and Spiegel, Si, to American Technical Industries, Inc. Modular tree using tapered frame and rings of branches. 3,692,617, Cl. 161-24.000.
Markus, Joseph; Rowe, James H.; Dew, Kenneth L.; and Mystowski, Edward J. Food preparing system for passenger carrying conveyances. 3,692,975, Cl. 219-202.000.
Marshall, Edward W.; and Sloan, John D., to Varian Associates. Electrostatic recorder with resilient conductive fabric backup electrode. 3,693,181, Cl. 346-74.0es.
Marsik, Zbynek: *See—*
Blachut, Theodore J.; Marsik, Zbynek; and Makow, David M., 3,692,406.
Martenson, Earl D.; and Ingham, Ray E., to Barber-Greene Company. Proportional screed control for a finisher. 3,691,916, Cl. 94-46.0ac.
Martin, Ernest B. W. Board game apparatus. 3,692,310, Cl. 273-131.0ab.
Martin, Henry; Aebi, Hans; and Ebner, Ludwig, to Ciba-Geigy AG. Method for selectively combating fungi and weed. 3,692,911, Cl. 424-322.000.
Martin, John C., to Bunn-O-Matic Corporation. Apparatus for supplying hot water for coffee brewing purposes. 3,691,932, Cl. 99-281.000.
Martin, John C., to Bunn-O-Matic Corporation. Automatic coffee brewer with liquid level sensor. 3,691,933, Cl. 99-282.000.
Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., to Kennecott Copper Corporation. Method of analyzing circulation of electrolyte in electrorefining cells. 3,691,832, Cl. 73-204.000.
Martin, Thomas E. Stop leak composition. 3,692,549, Cl. 106-33.000.
Martz, William L. Ventilator for water closets. 3,691,568, Cl. 4-213.000.
Maruyama, Kunio: *See—*
Hirooka, Masaaki; Takeya, Kenji; Uno, Yoshihiro; Yamane, Akira; and Maruyama, Kunio, 3,692,754.
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Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Filter and/or absorption media. 3,692,186, Cl. 210-494.000.
Masagaki, Akio: *See—*
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Maschke, Arnold E.: *See—*
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Massachusetts Institute of Technology: *See—*
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Massey, Dolas L. Threaded pipe joint facing tool. 3,691,882, Cl. 82-4.00c.
Massie, Stephen N. Hydroxylation of aromatic compounds. 3,692,842, Cl. 260-613.00d.
Masters, Harvey M.: *See—*
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Masuda, Toru: *See—*
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Mata, Justo M.: *See—*
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Mather, William B., Jr.; and Kerr, Edwin R., to Texaco Inc. Electrochemical chlorination of hydrocarbons in an HCl-acetic acid solution. 3,692,646, Cl. 204-81.000.
Mathis, Ronald D.; and Dix, James S, to Phillips Petroleum Company. Ultraviolet stabilizer system for polyolefins. 3,692,738, Cl. 260-45.75n.
Matloff, Jack M.; and Sanford, Robert A., to Meditech Energy and Environmental Corporation. Process for oxygenating blood and apparatus for carry out same. 3,692,648, Cl. 204-129.000.
Matratex Engineers Limited: *See—*
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Matsui, Katsuaki: *See—*
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Matsuura, Hideo; Kurokawa, Ikuji; and Murase, Yoshihiko, to Nippon Gakki Seizo Kabushiki Kaisha. Method for assembling tone hole closing means of wood-wind musical instruments and a construction of the means assembled thereby. 3,691,892, Cl. 84-380.000.

Matsuyama, Kihachiro: *See—*
Takayanagi, Kenjiro; Matsuyama, Kihachiro; Fujiwara, Tadashi; Mizuno, Hideaki; and Akiyama, Naoki, 3,692,576.

Matt, Richard J.; and Rolland, Thomas P., to Textron, Inc. Composite plastic bearing and method for making the same. 3,692,375, Cl. 308-238.000.

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Folson, Henry J.; Lucas, Daniel R., Jr.; Staats, William A.; and Tucker, James I., 3,691,669.
Merino, Dennis H.; and Schlau, Floyd E., 3,691,757.

Matthews, Russell E.; and Foerster, George S. Fluid quench apparatus. 3,691,813, Cl. 72-342.000.

Mauk, Robert R., to Kraftco Corporation. Preparation of pasta fiata cheese. 3,692,540, Cl. 99-116.000.

Maurer, John A.: *See—*
Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., 3,691,634.

Mausteller, John W.: *See—*
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Maxwell, Russell J.: *See—*
Burkhard, Mahlon D.; and Maxwell, Russell J., 3,692,264.

May, George; and Lill, Melvin H., to FMC Corporation. Truing apparatus. 3,692,081, Cl. 157-13.000.

Mayer, Karl. Knitted crepe fabric and method of manufacture. 3,691,796, Cl. 66-193.000.

Mayer, Oscar, & Co., Inc.: *See—*
Moss, Valentin G.; and Trautman, Jack C., 3,692,538.

Mayer, Richard E.; Birenzvige, Ammon; and Weedon, Gene C., to Allied Chemical Corporation. Filament comprising a polymer blend of polyester and polyanide containing an organic phosphorus compound. 3,692,867, Cl. 260-857.0pe.

Mayo, Alfred M. Fuel cell battery. 3,692,585, Cl. 136-86.00r.

Mayo, Robert Alan: *See—*
Livshitz, Stanley L.; and Mayo, Robert Alan, 3,692,236.

Maytag Company, The: *See—*
Kaldenberg, Henry J., 3,692,053.
Smith, Thomas R., 3,691,797.

Mazziotti, Ralph. Stay-rite flex joint. 3,691,788, Cl. 64-7.000.

Mc Cann, John J.: *See—*
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Mc Gee, Thomas W.: *See—*
Wang, Chun-Shaw; and Mc Gee, Thomas W., 3,692,793.

Mc Nalley, Gerald A.: *See—*
Tangue, Duane R.; and Mc Nalley, Gerald A., 3,692,004.

McAdow, Walter R., to Mobil Oil Corporation. Metallizing coating compositions containing coated metal flakes. 3,692,731, Cl. 260-32.80r.

McAuliffe, Gerald N., to Outboard Marine Corporation. Seat latch mechanism. 3,692,270, Cl. 248-384.000.

McCabe, Howard R., to Armstrong Cork Company. Apparatus for applying adhesive to the edges of a slit tube. 3,691,990, Cl. 118-35.000.

McCahon, John O.; and Byrne, William J., to Smyth Manufacturing Company, mesne. Apparatus for conveying and treating folded book signatures and the like. 3,692,299, Cl. 270-54.000.

McClaflin, Gifford G.: *See—*
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McCloskey, Chester M.; Rees, Donald E.; and Hoff, George L., to Norac Company, Inc. Nonhazardous polymerization initiators. 3,692,841, Cl. 260-610.00r.

McCollum, Anthony W.: *See—*
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McCorquodale & Company Limited: *See—*
Peacock, Jack, 3,692,298.

McCoy, Drew E.; Gilmer, William N.; and Johnston, Edward C., to Texaco Inc. Process for recovery of oil from refinery sludges. 3,692,668, Cl. 210-18.000.

McCulloch Corporation: *See—*
Dooley, James Linville; and Harasta, Clarence John, 3,692,010.

McDaniel, Carl V.; Baker, Richard William; and Rundell, Clark Ace, said McDaniel and said Rundell assors. to Grace, W. R., & Co. Catalytic cracking with catalyst of high-activity zeolite stabilized by cation and thermal stabilization. 3,692,665, Cl. 208-10.000.

McDonnell Douglas Corporation: *See—*
Donegan, Dennis J., 3,691,686.
Dueker, James E., 3,693,013.

McElwain, John C., to North American Rockwell Corporation. Deformable steering column assembly. 3,691,865, Cl. 74-492.000.

McFarland, Frederick R.; and Diffenderfer, Walter L., to K-D Manufacturing Company. Disc brake rotor thickness wear and score depth gauge and method of using same. 3,691,640, Cl. 33-147.00f.

McKay, Jerry Bruce, to Du Pont de Nemours, E. I., and Company. Multilobal multifilament yarn. 3,691,749, Cl. 57-140.00j.

McKinney, Joel D.; and Ondish, George F., to Gulf Research & Development Company. Catalytic cracking plant and method. 3,692,667, Cl. 208-120.000.

McKinsey, Kevin P.; and Mills, Thomas C., to Double Sixteen Company. Case for recording tape cassettes. 3,692,376, Cl. 312-11.000.

McLaren, Edwin C.: *See—*
Hennessey, Russell J.; and McLaren, Edwin C., 3,692,227.

McMillin, John V., to Westinghouse Learning Corporation. Digitally converted analog discrimination system. 3,692,982, Cl. 235-61.11e.

McNeil Laboratories, Inc.: *See—*
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McNulty, John G.: *See—*
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McPherson, Bill N., to Aqua-Genetics Inc. Floating fish enclosure. 3,691,994, Cl. 119-3.000.

Mead Corporation, The: *See—*
Calvert, Rodney K.; and Scott, Dale Keith, 3,691,808.

Meadows, Geoffrey W.; and Yates, Paul C. Preparation of binary borides, carbides and silicides. 3,692,479, Cl. 250-291.

Meakins, George Denis: *See—*
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Mebus, Henry R., to Harris-Intertype Corporation. Feeder and folder arrangement for signature gathering machine. 3,692,300, Cl. 270-55.000.

Mecca Bros. Inc.: *See—*
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Medicor Muvek: *See—*
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Meditech Energy and Environmental Corporation: *See—*
Matloff, Jack M.; and Sanford, Robert A., 3,692,648.

Meek, Flora L.; and Eff, Christian A., to General Electric Company. Combined broiler pan and broil rack. 3,691,937, Cl. 99-340.000.

Meguro, Kanji; Tawada, Hiroyuki; Kuwada, Yutaka; and Masuda, Toru, to Takeda Chemical Industries, Ltd. Process for preparing 1,4-benzodiazepin-2-ones. 3,692,772, Cl. 260-239.30d.

Mehnert, Walter Erich: *See—*
Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter Erich, 3,693,169.

Mehrens, Audrey O. J.; deceased (Mehrens, Edith Marion; Mehrens, Ronald Jay; Mehrens, Donald Ray; and Shuler, Jackie Fay Mehrens; independent executors of said Mehrens, Audrey O. J.). Torso structure for a mechanical pass receiver. 3,692,309, Cl. 273-55.00.

Mehrens, Donald Ray: *See—*
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Mehrens, Edith Marion: *See—*
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Meisert, Ernst; Striegler, Hellmut; Koch, Hans-Joachim; and Klebert, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Microporous polyurethane films and their production. 3,692,708, Cl. 260-2.5ay.

Meisler, Joseph; Banikiotes, Gregory C.; and Van Baush, Edward Harold, to Hydrocarbon Research, Inc. Hydrogen purification. 3,691,779, Cl. 62-23.000.

Melaja, Asko J., to Suomen Sokeri Osakeyho (Finnish Sugar Company). Procedure for the separation of fructose from the glucose of invert sugar. 3,692,582, Cl. 127-46.00a.

Melcher, Ronald E.; and Somers, Robert W., to Whitehead Brothers Company. Facing agents for molding sand. 3,692,550, Cl. 106-38.250.

Melead, James J., to Beloit Corporation. Winding, unwinding and tensioning apparatus. 3,692,251, Cl. 242-58.200.

Melech, Charles J., to Eastman Kodak Company. Modified triplets with reduced secondary spectrum. 3,692,386, Cl. 350-227.000.

Mellow, Stephen. Animated two-dimensional figure. 3,691,676, Cl. 46-126.000.

Meltsner, Bernard R. Preparation of dihydrocarbyl 2- or 4-hydroxybenzyl C_{4-20} alkyl ethers. 3,692,691, Cl. 252-404.000.

Menasoff, George N., to Anaconda Wire and Cable Company. Cable jacket extrusion apparatus and die with wire positioning means. 3,692,448, Cl. 425-113.000.

Menasse, Raphael: *See—*
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Mercadante, Joseph: *See—*
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Mercer, Allen C.: *See—*
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Mercer, Harry L. Method for space dyeing yarns. 3,692,466, Cl. 8-151.200.

Mercier, Jean: *See—*
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Merck & Co., Inc.: *See—*
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Stapley, Edward O.; Mata, Justo M.; Wolf, Frank J.; and Miller, Thomas W., 3,692,633.

Merino, Dennis H.; and Schlau, Floyd E., to Mattel, Inc. Hand held timer-lap counter toy. 3,691,757, Cl. 58-76.000.

Mertens, Wolfgang, to Herzer, Kurt, Firma. Headrest with adjusting devices. 3,692,356, Cl. 297-48.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Mesta Machine Company: *See—*
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Metal Forming and Coining Corporation: *See—*
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Metallgesellschaft AG: *See—*
Dorschner, Oskar; Carduck, Franz Josef; and Storkebaum, Christoph, 3,692,618.
Mettetal, Donald Jr. Mobile refuse compacting apparatus. 3,691,967, Cl. 100-100.000.
Metzger, Harold W., to Fischer & Porter Company. Variable-area flowmeter with removable metering tube. 3,691,835, Cl. 73-209.000.
Meyer, Alvin. Method of fabricating picture puzzle and puzzle produced thereby. 3,692,312, Cl. 273-157.00r.
Meyer, Andre: *See—*
Losi, Salvatore; Henzi, Rene; and Meyer, Andre, 3,692,641.
Meyer, Barthold F., to General Motors Corporation. Closure latch. 3,692,343, Cl. 292-216.000.
Meyer, Burton C.: *See—*
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Meyer, Harold: *See—*
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Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., to American Hoechst Corporation. 4,4,4-Trihydroxytriphenyl methylmethane as a laxative. 3,692,914, Cl. 424-346.000.
Meyer-Stoll, Hans Albrecht: *See—*
Josten, Friedrich; Lucker, Wilhelm; Meyer-Stoll, Hans Albrecht; and Von Minden, Wolfgang, 3,692,721.
Michel, Buzano, to Societe Rhodiaceta. Textured polyethylene terephthalate yarns. 3,691,748, Cl. 57-140.00j.
Micheletti, Ciro: *See—*
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Michelon, Robert, to U.C.P.I. S.a.r.L. pour L'Utilisation des Ceramiques et des Platres dans L'Industrie. Method of making a precision casting layered mold. 3,692,086, Cl. 164-25.000.
Micromedic Systems, Inc.: *See—*
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Miller, Christopher K.: *See—*
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Miller, Curtis E., to Beckman Instruments, Inc. Illumination apparatus. 3,692,997, Cl. 240-2.0ma.
Miller, Emery P.; and Probst, Richard O., to Ransburg Electro-Coating Corporation. Method of electrostatically depositing particles onto the trailing edge of a substrate. 3,692,606, Cl. 156-151.000.
Miller, George E.; and Kalb, Paul A., to Outboard Marine Corporation. Multi-cylinder pulse charging system. 3,692,006, Cl. 123-55.0ve.
Miller, Ivan Clay. Automatic feed control for saw grinder. 3,691,874, Cl. 76-41.000.
Miller, John J.; and Penird, Carl W., to Sylvania Electric Products, Inc. Method of fabricating a photoconductive pickup tube. 3,692,379, Cl. 316-19.000.
Miller, Norman K., to Miller Brothers. Safety edge construction for a powered door. 3,693,026, Cl. 307-119.000.
Miller, Robert B., Jr.; and Stephenson, Jerry E., to Carborundum Company, The. Filter cartridge and pack therefor and method of making same. 3,692,184, Cl. 210-437.000.
Miller, Thomas W.: *See—*
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Nakamura, Kitamaro, 3,692,408.
Minoru, Shindo; Kanji, Maro; and Teizo, Shinozaki, to Chugai Seiyaku Kabushiki Kaisha. Process for preparing 7-chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepin-2-one. 3,692,776, Cl. 260-239.30d.
Mischel, Howard T., to AVRCA Corporation. Flexible coupling. 3,692,337, Cl. 285-226.000.
Mitani, Naoyuki: *See—*
Uchida, Mitsuo; Iketani, Tadanao; and Mitani, Naoyuki, 3,692,048.
Mitchell, James E. Method of determining the concentration of inorganic sulfur compounds in a gas. 3,692,481, Cl. 23-230.0pc.
Mitchell, Wallace F., to Ammco Tools, Inc. Method of dampening vibrations in a rotating disc and apparatus therefor. 3,691,878, Cl. 82-1.00c.
Mitsuhashi, Masakazu: *See—*
Hirao, Mamoru; and Mitsuhashi, Masakazu, 3,692,580.
Mittelstaedt, Georg S. Inlets of centrifugal compressors, blowers and pumps. 3,692,420, Cl. 415-62.000.
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Mize, Lawrence A. Anti-capsizing warning system for vehicles. 3,693,145, Cl. 340-52.00r.
Mizuno, Aiko: *See—*
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Mochizuki, Mitsuako; Tanaka, Minoru; and Koyama, Tadataka. Method of making joint. 3,691,656, Cl. 29-628.000.
Moffitt, John Stuart, to International Business Machines Corporation. Acoustic coordinate data determination system. 3,692,936, Cl. 178-18.000.
Molenaar, Eenje, to Akzona Incorporated. Method for chemically modifying thread-forming polyesters. 3,692,745, Cl. 260-75.00t.
Molins Machine Company Limited: *See—*
Powell, Gordon F. W., 3,691,823.
Molitorisz, Joseph, to Rotopak Systems Inc. Compressing apparatus. 3,691,941, Cl. 100-89.000.
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Monroe Auto Equipment Co.: *See—*
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Moss, Valentin G.; and Trautman, Jack C., to Mayer, Oscar, & Co., Inc. Method of preparing meaty-flavored protein hydrolyzates from meat carcass components. 3,692,538, Cl. 99-107.000.
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Mouw, Robert B., to Aertech. Wideband detector for use in coaxial transmission lines. 3,693,103, Cl. 329-162.000.
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Neitzke, Nicholas R.; and Adams, Chester F., Jr., to Weyerhaeuser Company. Means for locking a lid to a container. 3,692,231, Cl. 229-45.000.
Nelson, Alden W., to Crompton & Knowles Corporation. Multiple extrusion apparatus. 3,692,447, Cl. 425-113.000.
Nelson, Norman A.; and Vanden Berg, Gary E., to Upjohn Company, The. Method of reducing hypercholesteremia in humans employing a copolymer of polyethylenepolyamine and a bifunctional substance, such as epichlorohydrin. 3,692,895, Cl. 424-78.000.
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Nestler, Wolfgang, to Siemens Aktiengesellschaft. Method for the production of dispenser cathode for electronic discharge vessels. 3,692,575, Cl. 117-213.000.
Nethersell, Barry Herbert, to British Domestic Appliances Limited. Spin driers. 3,691,645, Cl. 34-58.000.
Neti, Radhakrishna M.; and Bing, Colin C., to Beckman Instruments, Inc. Nitric oxide detection. 3,692,485, Cl. 23-232.00r.
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Newey, Herbert A.; and Holler, Howard V., to Shell Oil Company. Epoxy phthalimide resins. 3,692,705, Cl. 260-2.0ep.
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Niblo, Harold D. Material mixing and conveying apparatus. 3,692,282, Cl. 259-4.000.
Nicholds, Kenneth Edmund; and Longbottom, Geoffrey Brian, to Hymatic Engineering Company Limited, The. Cryogenic refrigerating apparatus. 3,691,784, Cl. 62-218.000.
Nichols, Henry E.: *See—*
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Nichols, James B. Cooking apparatus. 3,691,938, Cl. 99-348.000.
Nichols, Kenneth E., to Gates Rubber Company, The. Slipper bearing lubrication and seal. 3,692,373, Cl. 308-36.300.
Nick, Didier P., to Societe Verreries Industrielle Reunies du Loing. Connector for tubular elements. 3,692,338, Cl. 285-272.000.
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Nienstaedt, Robert; and Bunting, James William, to Courtaulds Engineering Limited. Process control method and apparatus for regulating temperature. 3,692,986, Cl. 235-151.100.

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Nijman, John P., to Bunker-Ramo Corporation, The. Miniature connector and method of making it. 3,693,140, Cl. 339-252.00p.

Niklarz, Manfred, to Stubbe Maschinenfabrik GmbH. Device for the spraying of shoe soles onto shoe shafts. 3,692,449, Cl. 425-119.000.

Niles, Burton M., to Tackle and Gear, Inc. Fishing pole mount. 3,691,665, Cl. 43-15.000.

Nilssen, Ole K., to Motorola, Inc. Method and apparatus for decoupling engine accessories. 3,692,007, Cl. 123-98.000.

Nilsson, Philip, to Kockum-Soderhamn Aktiebolag. Chipping and sawing machine. 3,692,074, Cl. 144-39.000.

Nimerick, Kenneth H., to Dow Chemical Company, The. Inhibitor to corrosive attack and method of use. 3,692,675, Cl. 252-8.55e.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nishimura, Tatsumi; Nagasawa, Sumio; Shinohara, Hiroshi; and Kado, Masaru, to Kumiai Chemical Industry Co., Ltd. Certain phosphorous compounds used as insecticides, miticides and fungicides. 3,692,902, Cl. 424-212.000.

Nishiwaki, Ituo: *See—*
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Niven, Francis J., Jr. Electrical compensation circuit utilizing two transistors connected in parallel. 3,693,029, Cl. 307-237.000.

Noe, Robert Joseph; Willems, Jozef Frans; and Poot, Albert Lucien, to Gavaert-Afga N.V. Electrophotographic material of zinc oxide treated with guanazole. 3,692,522, Cl. 96-1.800.

Noel, Eugene M. Hand-fed, hand-operated muffin splitting machine. 3,692,077, Cl. 146-72.000.

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Norton, Hubert Veare; Norton, Leslie Buckingham; and Norton, Douglas Edwin, to Norton Tool Company, Limited. Control apparatus for hydraulic equipment. 3,692,049, Cl. 137-489.500.

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Notley, John Michael; and Barr, James, to International Nickel Company, Inc., The. Electrodeposition of osmium and baths therefor. 3,692,642, Cl. 204-47.000.

Novak, Phillip J. Hollow sphere and structural elements for constructing same. 3,691,704, Cl. 52-80.000.

Novak, Ronald D.; and Petersen, Paul S., to Toolmark Co. Cutter arbor. 3,691,900, Cl. 90-11.00a.

Novak, Vincent F.; and Mason, John William. Split image motion picture projector and film therefor. 3,692,396, Cl. 352-221.000.

Nowack, Gerhard P., to Phillips Petroleum Company. Zinc arsenide isomerization catalyst and process. 3,692,853, Cl. 260-666.00a.

NRM Corporation: *See—*
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Nugent, John L.; and Masters, Harvey M., to Westinghouse Electric Corporation. Computer controlled RF noise and modulation analyzer. 3,693,076, Cl. 324-57.00n.

Nunn, Robert H., to United States of America, Navy. Thrust control means for a solid propellant rocket motor. 3,691,770, Cl. 60-254.000.

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O'Connor, Joseph M., to Peerless of America, Incorporated. Heat exchangers. 3,692,105, Cl. 165-181.000.

Oehmichen, Klaus, to Reichhold-Albert-Chemie-Aktiengesellschaft. Process for the production of aqueous polymer dispersions which are substantially free from residual monomer. 3,692,726, Cl. 260-29.60r.

Ogawa, Yukio: *See—*
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Ohmori, Koichiro. Apparatus for forming longitudinal corrugations in sheet material. 3,692,615, Cl. 425-370.000.

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Okamoto, Miyoshi; Ashida, Keiichi; and Watanabe, Koji, to Taniguchi, Shinzo and Toray Industries, Inc. Apparatus for spinning synthetic

"island-in-a-sea" type composite filaments. 3,692,423, Cl. 425-131.000.
Oku, Takeshi; Kazushige, Hirasawa; and Yoshimitsu, Matsumoto, to Matsushita Electric Industrial Co., Ltd. Arc welding. 3,692,973, Cl. 219-121.00p.
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Otterlei, Jon L. Spring biasing means for a self-illuminating pushbutton. 3,691,985, Cl. 116-124.000.
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Paolini, Giancarlo; and Micheletti, Ciro, to Societa Per l'Esercizio Dell Istituto Sperimentale Dei Metalli Leggeri. Self-coloring anodic oxidation of aluminium and its alloys. 3,692,644, Cl. 204-58.000.
Pappatheodorus Betancourt, Angel. Vehicle drawn trailer system. 3,692,332, Cl. 280-423.00r.
Pargeon, Fred H., to Globe Ticket Company. Multiple label dispenser. 3,692,222, Cl. 226-110.000.
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Peschko, Norman Duffield, to Pennwalt Corporation. Polytetrafluoroethylene dispersion coatings containing ammonium chromate or ammonium chromate-ammonium phosphate mixture. 3,692,727, Cl. 260-29.60f.
Pesci, Arturo. Method and apparatus for controlling the expansion and retraction of a telescopic cylinder assembly. 3,691,904, Cl. 91-169.000.
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Pilipovich, Donald; and Schack, Carl J., to North American Aviation, Inc. Method of preparing $OClF_3$. 3,692,476, Cl. 423-466.000.
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Prigent, Michel; and Dezael, Claude. Process for removing carbon dioxide from gases. 3,692,649, Cl. 204-129.000.
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Roth, Ahti Aadolf. Finger joint for jointing boards, battens, planks, and other comparable bodies. 3,692,340, Cl. 287-20.92t.
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Russell, William G., to Electrohome Limited. AGC impedance converter for varactor diode tuner. 3,693,092, Cl. 325-319.000.
Russell, William G., to Electrohome Limited. AGC impedance converter and voltage level shifter for high impedance source. 3,693,093, Cl. 325-319.000.
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Sevilla, Ernesto G. Data recovery timing control circuit. 3,693,098, Cl. 328-130.000.
Seyferth, Dietmar; and Spohn, Ralph J., to Massachusetts Institute of Technology. Synthesis of ketones from organo mercury compounds and carbon monoxide. 3,692,652, Cl. 204-158.00r.
Shaffer, John W.; and Bennett, Sedgwick R., to Sylvania Electric Products, Inc. Photographic flashlamp unit. 3,692,996, Cl. 240-1.300.
Shaffer, Walter M., to Towmotor Corporation. Control for hydrostatic transmission. 3,691,863, Cl. 74-478.000.
Shapiro, Arthur M., to United States of America, Army. Methods for reducing wear and seizure between rubbing titanium and steel surfaces. 3,692,589, Cl. 148-6.000.
Sharp, David D., to Reinhart, Inc. Shelf and clothes hanger apparatus and method. 3,692,378, Cl. 312-242.000.
Shastal, John F. Musical potty chair. 3,691,980, Cl. 116-67.000.
Shatterproof Glass Corporation: *See—*
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Shelton, James D., 51% to Krutsinger, Ralph W., Jr. Table mechanism for use in transferring dimensional and shape information between two and three dimensional objects. 3,691,901, Cl. 90-131.000.
Shenkenberg, David R.; Chang, Jiann C.; and Edmondson, Locke F. Milk-fruit juice beverage and process for preparing same. 3,692,532, Cl. 99-28.000.
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Shibahara, Yasuo; Shimoyama, Yasohachi; and Otaki, Makoto, to Sanyo Chemical Industries, Ltd. Emulsifiable oxidized polyolefins. 3,692,877, Cl. 260-897.000.
Shiller, John W. Photometric analyzer employing fiber optic light transmitting means. 3,692,415, Cl. 356-187.000.
Shimizu, Yutaka, to Alps Electric Co., Ltd. Variable resistor. 3,693,129, Cl. 338-183.000.
Shimokawa, Shinichi: *See—*
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Shimoyama, Yasohachi: *See—*
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Shobert, Samuel M. Method and apparatus for making a reinforced plastic well screen. 3,692,607, Cl. 156-175.000.
Shockcor, Joe H., to Resource Control, Inc. Apparatus for removing pollutants and ions from liquids. 3,692,661, Cl. 204-269.000.
Shorrock, John Douglas. Tap changing apparatus for transformers. 3,693,070, Cl. 323-43.50r.
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Silverman, Lee H.; Silverman, Arthur A.; and Gaworski, Edward T., to General Wire Spring Company. Sewer augering machine. 3,691,583, Cl. 15-104.35n.
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Slator, Damon T.; and Peil, Archie W., to Bowen Tools, Inc. Tubing hanger assembly and method of using same for hanging tubing in a well under pressure with no check valve in tubing. 3,692,107, Cl. 166-55.000.

Sletzinger, Meyer; Harmetz, Ronald; and Reinhold, Donald F. Process for preparing cis 5-fluoro-2-methyl-1- (p-methylsulfinylbenzylidene)-3-indenyl acetic acid. 3,692,651, Cl. 104-158.00r.

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Smith, Cloyd D. Exhaust noise suppressor for gas turbine. 3,692,140, Cl. 181-33.00h.

Smith, Donald A.; Perry, Ernest J.; and Hollister, Kenneth R., to Eastman Kodak Company. Terpolymers containing thioalkyl acrylates or thioalkylacrylamides. 3,692,753, Cl. 260-79.700.

Smith, Donald J., to Smith-Schreyer & Assoc, Inc. Alignable end seals for a splice case. 3,692,926, Cl. 174-92.000.

Smith, Edward I. Stocking appliance. 3,692,217, Cl. 223-111.000.

Smith, Harold J., to General Electric Company. Magnetic shunt. 3,693,127, Cl. 336-160.000.

Smith, Howard J.; and Smith, Byron F. Jig for sharpening jointer blades and the like. 3,691,702, Cl. 51-249.000.

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Smith, John Henry William, to Microponent Development Ltd. Method of making multi layer circuit boards. 3,691,632, Cl. 29-625.000.

Smith, Kenneth B., to Honeywell, Inc. Card recorder for transcribing magnetic information. 3,693,182, Cl. 346-74.00m.

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Smith, Phillip W. Abrasive blasting apparatus. 3,691,691, Cl. 51-15.000.

Smith, Raymond P. Adjustable pedal. 3,691,868, Cl. 74-512.000.

Smith, Richard L.; and Uraneck, Carl A., to Phillips Petroleum Company. Carbon black containing organometal compounds of the allylic or benzylic type. 3,692,553, Cl. 106-307.000.

Smith, Thomas R., to Maytag Company, The. Liquid control system for washing machine. 3,691,797, Cl. 68-23.400.

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Societe Anonyme dite: L'Oreal: *See—*
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Sormani, Luigi Oscar, to Walowski, Raymond J. Process for producing an antique finish. 3,692,557, Cl. 117-41.000.

Soulie, Guy; and Lozach, Gerard. Propelling devices for tools to lower or raise safety appliances in oil wells. 3,692,108, Cl. 166-153.000.

Southam, Donald L.; Weigl, William; and Kacmarcik, Thomas J., to Harris-Intertype Corporation. Disconnect arrangement for multi-unit printing press. 3,691,948, Cl. 101-183.000.

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Sparlin, Derry D., to Continental Oil Company. Control of incompetent formations. 3,692,116, Cl. 166-295.000.

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Spicer, William E., to Varian Associates. X-ray image intensifier tubes having the photo-cathode formed directly on the pick-up screen. 3,693,018, Cl. 250-213.000.

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Sprenger, William K., to Searle, G. D., & Co. 5-Phenyl-1-sulfonamidopyrrole-2-propionic acids and congeners. 3,692,799, Cl. 260-326.300.

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Srail, Raymond C.; and Taylor, Ray D., to Goodrich, B. F., Company, The. Delayed action vulcanization accelerator system. 3,692,719, Cl. 260-23.50a.

St. Cyr, David R., to Goodyear Tire & Rubber Company, The. Hydrocarbon-derived resins having low softening point. 3,692,756, Cl. 260-80.700.

St. Regis Paper Company: *See—*
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Stack, Eugene V.; and Burnett, Edward L., to Dow Chemical Company, The. Method for lining tapered cavities. 3,691,619, Cl. 29-451.000.

Stacy, Jack C., Jr. Improved overland vehicle. 3,692,130, Cl. 180-5.00r.

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Stanton, Garth M.; and Drehe, John L., to Chevron Research Company. Greases thickened with quinacridone pigments. 3,692,677, Cl. 252-25.000.

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Stapley, Edward O.; Mata, Justo M.; Wolf, Frank J.; and Miller, Thomas W., to Merck & Co., Inc. Process for preparing 6-chloro-α-quinoxaline-carboxylic acid-1,4-dioxide. 3,692,633, Cl. 195-80.00r.

Staud, Miloslav; and Lazarev, Anatolij, to Chepos, Zavody chemickeho a potravinarskeho strojirenstvi oborovy podnik. Method for pyrolyzing hydrocarbons. 3,692,862, Cl. 260-683.00r.

Staudhammer, Karl P.; and Reineking, Vernon H., to TRW Inc. Process for increasing the whisker and fiber content in a matrix. 3,691,623, Cl. 29-472.300.

Stauffer Chemical Company: *See—*
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Steinbronn, George J., to Proctor-Silex Corporation. Unitary ironing table pad and cover sets and method of manufacture. 3,691,661, Cl. 38-140.000.

Steinman, Gerald W., to Intertherm, Inc. Wind control flue and air intake assembly. 3,691,930, Cl. 98-62.000.

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Stenstrom, Lennart Arvid, to Alfa-Laval AB. Method and apparatus for heat treatment of packaged products. 3,692,616, Cl. 165-2.000.

Stephan, Hans Werner: *See—*
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Sterzik, Harry Klaus. Method for the chemical treatment of living trees and injection cartridge for the performance of the aforesaid method. 3,691,683, Cl. 47-57.500.

Steward, Jerry L.: *See—*
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Stewart, Marshall E., to Stewart Filmscreen Corporation. Microfilm viewer. 3,692,399, Cl. 353-27.000.

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Stikkers, Alexander P.; Elzy, Albert E.; and Czyl, Joseph L., to Vapor Corporation. Pilot valve assembly for a switch heater. 3,692,016, Cl. 126-271.20b.

Stockford, William F. Air treatment apparatus. 3,691,733, Cl. 55-257.000.

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Stoian, Alexander. Adjustable card holder. 3,691,664, Cl. 40-124.400.

Stone, Alice B. Multiple nesting hair curler. 3,692,034, Cl. 132-40.000.

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Strandell, Per-Olof. Moulds. 3,691,816, Cl. 72-467.000.

Strauss, Martin. Projector. 3,692,398, Cl. 353-26.000.

Strebig, Richard W. Automatic electric jig-fishing device. 3,691,668, Cl. 43-19.200.

Strehlow, Wolfgang H. Epitaxial film process and products thereof. 3,692,572, Cl. 117-201.000.

Strelitz, Justina: *See—*
Roth, Barbara; and Strelitz, Justina, 3,692,787.

Strick Corporation: *See—*
Tenenbaum, Paul; and Seng, Paul J., 3,692,363.

Striegler, Hellmut: *See—*
Meisert, Ernst; Striegler, Hellmut; Koch, Hans-Joachim; and Klebert, Wolfgang, 3,692,708.

Strock, Richard R., to Sperry Rand Corporation. Indicator mechanism for navigation instruments. 3,691,987, Cl. 116-129.00r.

Stroh, Donald G.: *See—*
Wright, Arthur G., 3,692,117.

Strohmeir, Harald, to Gebr. Bohler & Co. AG. Apparatus for continuously cleaning the surface of elongated stock. 3,691,692, Cl. 51-20.000.

Strom, Eric T.: *See—*
Heitman, George H.; Strom, Eric T.; and Cerrone, Anthony G., 3,691,811.

Stromberg-Carlson Corporation: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,692,946.

Stubbe Maschinenfabrik GmbH: *See—*
Niklarz, Manfred, 3,692,449.

Sturmer, Hans, to Bosch, Robert, G.m.b.H. Transmission arrangement with basic transmission mechanism. 3,691,861, Cl. 74-330.000.

Sugardale Foods, Inc.: *See—*
Dearth, Robert L.; and Lindle, Rodger M., 3,692,539.

Suggitt, Robert M.: *See—*
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,692,694.

Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,692,696.
Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,692,697.

Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, to Texaco Inc. Fluorided composite alumina catalysts. 3,692,695, Cl. 252-439.000.

Sugimoto, Yoichi: *See—*
Sugimoto, Yoichi; Nakata, Shizuhiro; Nakashima, Atsuo; and Idomoto, Souzo, 3,692,922.

Sugimoto, Yoichi; Nakata, Shizuhiro; Nakashima, Atsuo; and Idomoto, Souzo, to Nakashima, Atsuo, Nakata, Shizuhiro, Sugimoto, Yoichi and said Idomoto assor. to Sumitomo Electric Industries, Ltd. Low cost cable joint with high voltage stress relief. 3,692,92, Cl. 174-73.00r.

Sugiyama, Iwakichi: *See—*
Setsuda, Kisuke; and Sugiyama, Iwakichi, 3,692,752.

Sumitomo Electric Industries, Ltd.: *See—*
Sugimoto, Yoichi; Nakata, Shizuhiro; Nakashima, Atsuo; and Idomoto, Souzo (said Idomoto assor. to), 3,692,922.

Summer, James R.; and White, Randall F., to Garrett Corporation, The. Fluid distensible truss. 3,692,144, Cl. 182-48.000.

Sun Oil Company: *See—*
Duling, Irl N.; Driscoll, Gary L.; and Moore, Robert E., 3,692,750.
Hoffman, David M., 3,692,814.
Thompson, Robert M., 3,692,743.

Sunbeam Corporation: *See—*
Gronwick, Jerry P.; Illian, Douglas F.; and Westphal, Donald J., 3,691,660.

Sundberg, Mauritz R. G.: *See—*
Carlsson, Bengt; and Sundberg, Mauritz R. G., 3,692,612.

Sundstrand-Engelberg, Inc.: *See—*
Schaller, Robert L., 3,691,698.

Sung, Albert Y. Foldable article of furniture. 3,692,358, Cl. 297-159.000.

Suomen Sokeri Osakeyho (Finnish Sugar Company): *See—*
Melaja, Asko J., 3,692,582.

Superior Tabbies Incorporated: *See—*
Cunningham, Walter F., 3,691,662.

Suzuki, Munehiko; Hosokawa, Etsuo; Waki, Misao; and Fukushima, Masatada, to Showa Electric Wire & Cable Co., Ltd. Phnolic-solvent-soluble aromatic polyamide-imide and process for producing same. 3,692,740, Cl. 260-47.0cp.

Suzuki, Takashi: *See—*
Hamabe, Takeshi; and Suzuki, Takashi, 3,692,640.

Svendsen, Per Just, to LKB-Produkter AB. Electrophoretic process. 3,692,654, Cl. 204-180.00r.

Svenska Aktiebolaget Bromsregulator Malmo: *See—*
Larsson, Karl Bertil, 3,692,152.

Svenska Rotor Maskiner Aktiebolag: *See—*
Pettersson, Birger; and Johnsson, Bo, 3,692,096.

Svensson, Sten Gunnar Hugo: *See—*
Liedberg, Kurt Herman; Jonsson, Nils Erik Reinhold; and Svensson, Sten Gunnar Hugo, 3,692,214.

Swanson, Forrest V.; and Sellon, Raymond N., Jr., to Case, J. I., Company. Plural panel door assembly. 3,692,083, Cl. 160-206.000.

Swartz, Horace M., to FMC Corporation. Truck tow conveyor switching apparatus. 3,691,959, Cl. 104-88.000.

Swearingen, Kent W., to International Business Machines Corporation. Apparatus for controlling the cycle steals required by a chain printer under CPU control. 3,693,160, Cl. 340-172.500.

Sweeney, B. K., Manufacturing Co.: *See—*
Layne, Arnold B., 3,691,612.

Sweeney, Richard F.: *See—*
Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., 3,692,885.

Sweet, Ervin J.: *See—*
Doyle, Brian W.; Rygelis, Joseph; and Sweet, Ervin J., 3,692,334.

Swenck, George F., to Reynolds Metals Company. Method of making ball bat metal body system. 3,691,625, Cl. 29-557.000.

Swerdlow, Richard Barry, to Bell Telephone Laboratories, Incorporated. Push-pull feed-forward amplifier. 3,693,109, Cl. 330-81.000.

Swett, James B.: *See—*
Croyle, Jack V.; and Swett, James B., 3,692,208.

Swift & Company: *See—*
Pirro, Michael S., 3,691,717.

Swiss Aluminium Ltd.: *See—*
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Sylvania Electric Products, Inc.: *See—*
Chenot, Charles F., 3,693,006.
Miller, John J.; and Penird, Carl W., 3,692,379.
Shaffer, John W.; and Bennett, Sedgwick R., 3,692,996.
Wedam, Werner Franz, 3,693,043.

Sylvester, David: *See—*
Dee, William C.; and Sylvester, David, 3,691,952.

Syverson, Martelle J., to Fountain Industries, Inc. Vending machine coin mechanism. 3,692,165, Cl. 194-13.000.

Szkudlapski, Alfons H.: *See—*
Rackus, John J.; Skilbeck, John P.; and Szkudlapski, Alfons H., 3,692,638.

Szucs, Andrew E.: *See—*
Miles, Ray P.; and Szucs, Andrew E., 3,691,576.

Tabler, Donald C., to Phillips Petroleum Company. Semi-homogeneous liquid suspension catalyst complex for selective hydrogenation. 3,692,852, Cl. 260-666.00a.

Taccone, Russell W., to Bangor Punta Operations, Inc. High impact molding machine. 3,692,093, Cl. 164-212.000.

Tackle and Gear, Inc.: *See—*
Niles, Burton M., 3,691,665.

Takagi, Nobuo; and Takiguchi, Takashi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of and apparatus for friction welding. 3,691,622, Cl. 29-470.300.

Takahashi, Tohru: *See—*
Iijima, Nobuaki; and Takahashi, Tohru, 3,693,108.

Takahashi, Toru, to Canon Kabushiki Kaisha. Electrophotographic color process. 3,692,519, Cl. 96-1.200.

Takata, Toyoharu; Fujii, Keisuke; Yano, Nobumitsu; Fukushima, Masao; Nagayoshi, Fumio; and Mizuno, Aiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Nacreous pigments from nucleic acid derivatives. 3,692,768, Cl. 260-211.50r.

Takayanagi, Kenjiro; Matsuyama, Kihachiro; Fujiwara, Tadashi; Mizuno, Hideaki; and Akiyama, Naoki, to Victor Company of Japan, Limited. Electron scattering prevention film and method of manufacturing the same. 3,692,576, Cl. 117-217.000.

Takeda Chemical Industries, Ltd.: *See—*
Meguro, Kanji; Tawada, Hiroyuki; Kuwada, Yutaka; and Masuda, Toru, 3,692,772.

Takeya, Kenji: *See—*
Hirooka, Masaaki; Takeya, Kenji; Uno, Yoshihiro; Yamane, Akira; and Maruyama, Kunio, 3,692,754.

Takiguchi, Takashi: *See—*
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Takita, Hajime, to Iwatsu Electric Company Limited. Method of reading bistable storage tubes by increasing luminescence where information is stored. 3,693,040, Cl. 315-12.000.

Tamai, Yasuo; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Process for developing electrostatic latent image and liquid developer used therefor. 3,692,523, Cl. 96-1.400.

Tamura, Gakuzo: *See—*
Arima, Kei; Tamura, Gakuzo; Sakai, Heiichi; and Kohsaka, Masanobu, 3,692,777.

Tanaka, Minoru: *See—*
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Tanaka, Osamu: *See—*
Godai, Tomokazu; and Tanaka, Osamu, 3,692,590.

Tangue, Duane R.; and Mc Nalley, Gerald A., to General Motors Corporation. Fan shroud and fluid receptacle arrangement. 3,692,004, Cl. 123-41.570.

Taniguchi, Shinzo: *See—*
Okamoto, Miyoshi; Ashida, Keiichi; and Watanabe, Koji, 3,692,423.

Tannenbaum, Marcel: *See—*
Schwartz, Robert; Manolache, Constantin; Tannenbaum, Marcel; Vasile, Gheorghe; Rey, Vasile; Sima, Constantin; and Cambureanu, Aurel, 3,692,277.

Tarbet, Cecil Sidney Charles. Carrier for an individual sample cell. 3,692,416, Cl. 356-244.000.

Taub, William: *See—*
Taub, William; Denss, Rolf; and Ostermayer, Franz, 3,692,913.

Taub, William; Denss, Rolf; and Ostermayer, Franz, to Taub, William, Denss, Rolf and Ostermayer, Franz. Cyclohexenyl amines in the treatment of pain. 3,692,913, Cl. 424-325.000.

Tawada, Hiroyuki: *See—*
Meguro, Kanji; Tawada, Hiroyuki; Kuwada, Yutaka; and Masuda, Toru, 3,692,772.

Taylor, Cecil Isaac. Rotary tool drive member. 3,692,319, Cl. 279-1.00c.

Taylor, Ray D.: *See—*
Srail, Raymond C.; and Taylor, Ray D., 3,692,719.

Taylor, Richard John: *See—*
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Technicon Instruments Corporation: *See—*
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Teizo, Shinozaki: *See—*
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Tektronix, Inc.: *See—*
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Wilhoit, Darrel I., 3,693,058.

Tele-Conn Enterprises, Inc.: *See—*
Alessio, Ralph D., 3,691,896.

Teledyne, Inc.: *See—*
Shirey, Carey L.; and Gilgore, William H., 3,692,195.

Templeton, John Glenn; and Seitz, Calvin W., to Rospatch Corporation. Label handling system. 3,692,176, Cl. 206-56.0ab.

Tenenbaum, Paul; and Seng, Paul J., to Strick Corporation. Convertible vehicle body and auxiliaries. 3,692,363, Cl. 298-24.000.

Tennant Company: *See—*
Kasper, Joseph G., 3,691,579.

Tenne, Lave, to Hasselblad, Fritz Victor. Device in a photographic camera for setting the film speed value and transferring it to the exposure meter. 3,691,918, Cl. 95-10.00c.

Tenneco Chemicals, Inc.: *See—*
Di Bella, Eugene P., 3,692,850.

Tepper, Frederick; and Mausteller, John W., to Mine Safety Appliances Company. Underwater breathing apparatus. 3,692,026, Cl. 128-142.200.

Terada, Osamu, to Kyowa Hakko Kogyo Co., Ltd. Process for producing lipase. 3,692,632, Cl. 195-66.00r.

Terasaki, Paul I., to United States of America, Health, Education and Welfare. Lymphocyte transport bag. 3,692,493, Cl. 23-259.000.

Terrell, Walter L., Jr.: *See—*
Richards, John F.; and Terrell, Walter L., Jr., 3,691,732.

Tetenbaum, Marvin T.; and Degginger, Edward R., to Allied Chemical Corporation. Method of combating nematodes employing N,N'-disubstituted-2,5-diketopiperazines. 3,692,908, Cl. 424-250.000.

Teurnier, Roger, to C.I.T.-Compagnie Industrielle des Telecommunications. Device for evaluating the difference between two variable inputs. 3,693,167, Cl. 340-172.500.

Tewsley, William: *See—*
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Texaco Inc.: *See—*
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Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., 3,692,696.
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Textile Technology, Inc.: *See—*
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Textron, Inc.: *See—*
Matt, Richard J.; and Rolland, Thomas P., 3,692,375.

Thatcher, Judith G.: *See—*
White, Rudolph C.; and Thatcher, Judith G., 3,692,864.

Thayer, Victor R. Process for enrichment by countercurrent mass transfer. 3,692,477, Cl. 423-580.000.

Thelemaque, Louis Emanuel, to Bell Telephone Laboratories, Incorporated. Multiple mark detectors for end marked switching networks. 3,692,943, Cl. 179-18.00e.

Thermolyne Corporation: *See—*
Clarke, Benjamin Earl, 3,691,988.

Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,691,957.

Thevenin, Luc: *See—*
Dumast, Michel; Rouzaud, Guy; and Thevenin, Luc, 3,693,022.

Thiokol Chemical Corporation: *See—*
Schneiter, Fred E.; Jorgensen, Howard E.; and Davis, Leland E., 3,692,495.

Thoesh, Donald L., to Electromechanisms, Inc. Key operated pulse generating device. 3,693,033, Cl. 310-14.000.

Thomason, James P.; and Jennings, Thomas Harold. Automatic welding hood with automatically positioned eye shield. 3,692,974, Cl. 219-147.000.

Thompson, James E. Aerial twister toy and catapult therefor. 3,691,674, Cl. 46-74.00r.

Thompson, John J., Jr.: *See—*
Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., 3,692,885.

Thompson, Phillip G., to Minnesota Mining and Manufacturing Company. Fluoroxidants. 3,692,815, Cl. 260-453.00r.

Thompson, Robert M., to Sun Oil Company. Preparation of 2,5-dimethylhexadienes. 3,692,743, Cl. 260-681.000.

Thompson, Wallace W., to North American Aviation, Inc. Castable nitrate propellants. 3,692,598, Cl. 149-19.000.

Thompson, Wm. T., Co.: *See—*
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Thomson-CSF: *See—*
Marcy, Raymond; Bouygues, Jean; and Lacombat, Michel, 3,692,413.

Tillotson, James E.: *See—*
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Timmons, John W. Liquid pumping system. 3,692,430, Cl. 417-26.000.

Tindall, David: *See—*
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Tissmetal Lionel-Dupont: *See—*
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Togneri, Mauro G.: *See—*
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Tokico Ltd.: *See—*
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Tokunaga, Takehisa: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha; a/k/a Tokyo Shibaura Electric Co., Ltd.: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Katagiri, Shigenobu; and Yokota, Mitsuhisa, 3,692,419.
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Tomota, Miyaji; Ishikawa, Yutaka; Yamasaki, Hiroo; and Kurita, Yoshio, to Kabushikikaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.). Current meter or flow meter. 3,691,830, Cl. 73-194.00b.

Tomsa, Stanley J.: *See—*
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Tool Research Engineering Corporation: *See—*
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Toolmark Co.: *See—*
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Toray Industries, Inc.: *See—*
Okamoto, Miyoshi; Ashida, Keiichi; and Watanabe, Koji, 3,692,423.

Torrest, Robert Steven: *See—*
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Total Energy Corporation: *See—*
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Towmotor Corporation: *See—*
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Toyo Rayon Company, Ltd.: *See—*
Okada, Hiroshi; Osakada, Atsushi; Minami, Satoyuki; Aoki, Toshikazu; Hisamori, Tetsuo; Koyanagi, Hironobu; and Otsuka, Hiromi, 3,692,602.

Toyoda Koki Kabushiki Kaisha: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Tatsuo; and Kobayashi, Ikuya, 3,693,151.

Tra, Josef, to Voith, J. M., GmbH. Filter for cleaning suspensions. 3,692,183, Cl. 210-415.000.

Traubel, Harro; and Konig, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Microporous sheet structures and a process for the preparation thereof. 3,692,570, Cl. 117-161.000.

Trautman, Jack C.: *See—*
Moss, Valentin G.; and Trautman, Jack C., 3,692,538.

Trautvetter, Werner: *See—*
Bernhardt, Gunther; Buning, Robert; and Trautvetter, Werner, 3,692,502.

Trentelman, Elmer F., to American Hospital Supply Corporation. Complement fixation testing tray. 3,692,491, Cl. 23-253.00r.

Trevisiol, Franco, to AMP Incorporated, mesne. Electrical connector for a printed circuit board. 3,693,134, Cl. 339-59.00m.

Trimble, Philip K., to General Motors Corporation. Time delay circuit. 3,693,101, Cl. 328-177.000.

Trofimov, Valery Leonidovich: *See—*
Amosov, Pavel Evgenievich; Smekhov, Vitaly Konstantinovich; Trofimov, Valery Leonidovich; Shvarts, Avely Isaich; Shnepp, Vladimir Borisovich; and Razumovsky, Alexandr Petrovich, 3,692,441.

Troponwerke Dinklage & Co.: *See—*
Boltze, Karl-Heinz; Brendler, Otfried; and Lorenz, Dietrich, 3,692,818.

Troxler, Franz; and Seemann, Fritz. 1-(2-Hydroxy-3-amino-propoxy)-9-fluorenones and the salts thereof. 3,692,836, Cl. 260-570.700.

TRW Inc.: *See—*
Cass, Richard; and Herbenar, Edward J., 3,692,295.
Luckey, George R., 3,691,705.
Staudhammer, Karl P.; and Reineking, Vernon H., 3,691,623.

Tsumura, Juntendo, Co., Ltd.: *See—*
Tsumura, Jusha; Imaseki, Isumi; and Nagasawa, Michio, 3,692,896.

Tsumura, Jusha; Imaseki, Isumi; and Nagasawa, Michio, to Tsumura, Juntendo, Co., Ltd. Process for the preparation of water-soluble tablets. 3,692,896, Cl. 424-78.000.

Tsutsumi, Yoshio, to Daiichi Seiyaku Co., Ltd. Method for treating scours in domestic livestock. 3,692,904, Cl. 424-227.000.

Tucker, James I.: *See—*
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Tucker, Jasper J. Winch carrying snow grooming vehicle supported by skids and powered by an anchored drawline. 3,692,119, Cl. 172-23.000.

Tuddenham, William M.: *See—*
Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., 3,691,832.

Tuerk, Robert P. Truck stake arrangement. 3,692,354, Cl. 296-36.000.

Tulagin, Vsevolod: *See—*
Reinis, Gedeminas J.; and Tulagin, Vsevolod, 3,692,518.

Turner, Lyman H., to Xerox Corporation. Automatic control of toner concentrations. 3,692,403, Cl. 355-3.000.

Twin City Shipyard Inc.: *See—*
Seiford, Donald S., Sr.; and Seiford, Robert R., 3,691,974.

Twin Disc, Incorporated: *See—*
Arnold, Bruce C.; Auman, John T., Jr.; Kinnison, Charles G.; and Lantz, James E., 3,692,157.
Hilpert, Conrad R., 3,692,160.

Tyler, Burtis M.: *See—*
Nolte, William C.; and Tyler, Burtis M., 3,691,642.

Uchida, Mitsuo; Iketani, Tadanao; and Mitani, Naoyuki. Apparatus for controlling a mass flow rate of liquid in a chemical process. 3,692,048, Cl. 137-403.000.
Uchida, Yasuo; and Kuroyanagi, Yoshitaka, to Konishiroku Photo Industry Co., Ltd. Automatic exposure control system for a single lens reflex camera. 3,691,917, Cl. 95-10.0po.
Uchiumi, Tatsuro; and Nakano, Goro, to Tokyo Shibaura Electric Co., Ltd. Automatic lamp filament-transferring equipment. 3,692,194, Cl. 214-1.0bh.
U.C.P.I. S.a.r.L. pour L'Utilisation des Ceramiques et des Platres dans L'Industrie: *See—*
Michelon, Robert, 3,692,086.
Ueda, Koza; Kimoto, Jitsumi; and Moritake, Mitsuru, to Osaka Gas Company, Limited. Process for treating tars. 3,692,663, Cl. 208-44.000.
Uematsu, Sumio: *See—*
Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; and Uematsu, Sumio, 3,692,562.
Ueno Pharmaceutical Co., Ltd.: *See—*
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Ueno, Ryuzo; Miyazaki, Tetsuya; and Inamine, Shigeo, to Ueno Pharmaceutical Co., Ltd. Method of the preservation of food against putrefaction. 3,692,534, Cl. 99-90.00p.
Uhde, Friedrich, G.m.b.H.: *See—*
Mose, Luciano, 3,692,658.
Uhtenwoldt, Herbert R., to Heald Machines Company, The. Grinding machine. 3,691,699, Cl. 51-165.920.
Ulansey, Judson T. Fabric clip. 3,691,596, Cl. 24-84.00r.
Ulbing, Cynthia Geer, to Eastman Kodak Company. Photosensitive/photothermic composition and process. 3,692,526, Cl. 96-108.000.
Umeno, Kyozo: *See—*
Kimura, Hiroshiro; Nambu, Takeshi; Inoue, Kiyoshi; Imahori, Yoshiyuki; Yamaguchi, Kenjyo; and Umeno, Kyozo, 3,692,384.
Underwood, Theodore A., to Goodyear Tire & Rubber Company, The. Water resistant polyurethane/polymer laminate. 3,692,742, Cl. 220-63.00a.
Union Carbide Corporation: *See—*
Phillips, Benjamin; Pollart, Dale Flavian; and Koleske, Joseph Victor, 3,692,023.
Union Oil Company: *See—*
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Union Oil Company of California: *See—*
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Gonta, Stewart J.; and Hallis, Thomas, Jr., 3,692,564.
Uniroyal, Inc.: *See—*
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Uniroyal Ltd.: *See—*
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United Brands Company: *See—*
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United States Borax & Chemical Corporation: *See—*
Arber, Scott Gordon; and Young, Oswald William John, 3,692,474.
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Air Force: *See—*
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Branovich, Louis E.; Fitzpatrick, William B. P.; and Long, Martin L., Jr., 3,692,566.
Dee, William C.; and Sylvester, David, 3,691,952.
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National Aeronautics and Space Administration; Administrator of the; with respect to an invention of:
Huber, Clayton S. Modification of the physical properties of freeze-dried rice. 3,692,533, Cl. 99-80.0ps.
Navy: *See—*
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Van Dijk, Jan; and Davies, Jenkin Eric. Pharmacologically active amino-ethyl oximes. 3,692,835, Cl. 260-566.0ae.
Van Dyk, John C., to Woods Research and Development Corporation. Water extendible polyester resins. 3,692,724, Cl. 260-29.6nr.
Van Moorsel, Frans, to Gozen Spierenburg. Apparatus for manually operating plates or discs provided with apertures. 3,692,954, Cl. 179-90.0at.
Van Ostrand, William F.: *See—*
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Vanderklaauw, Peter M., to Research Corporation. Apparatus for forming and lifting multi-story columns in one story increments. 3,692,446, Cl. 425-63.000.
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Vavrick, James E.; and Barthold, Fred O. Printed circuit board socket and holding frame. 3,693,135, Cl. 339-75.0mp.
Vayson De Pradenne, Henri, to Alsthom-Savoisienne. Cogogenic electrical transformer apparatus having double wall construction. 3,692,207, Cl. 220-15.000.
VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
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Von Behren, Robert A., to Minnesota Mining and Manufacturing Company. Belt driven tape cartridge. 3,692,255, Cl. 242-192.000.

Von Grabe, Walther, to Zimmerman, A. M., & Co. Panchromatic raster plate for electrophotographic use. 3,692,521, Cl. 96-1.500.

Von Konig, Anita; Kabbe, Hans-Joachim; Mader, Helmut; Otto, Rigobert; and Reuss, Helmut, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsion containing a mercapto pyrimidine derivative antifoggant. 3,692,527, Cl. 96-109.000.

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Von Otto, Robert E., 1/2 to Nichols, Henry E. Surgical appliance. 3,692,024, Cl. 128-132.000.

Von Vick, George, to Bunker-Ramo Corporation, The. Trimmer potentiometer with resistive overlay. 3,693,062, Cl. 338-92.000.

Vornberger, Walter, to Kamborian, Jacob S.,. Toe wiping with insole unsecured to last bottom. 3,691,575, Cl. 12-145.000.

Vossen, John Louis, Jr., to RCA Corporation. Method of radio frequency sputter etching. 3,692,655, Cl. 204-192.000.

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Wagley, Allen. Crusher. 3,691,942, Cl. 100-151.000.

Wagner, Gary L.: *See*—
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Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Arrangement for providing a series of illuminations. 3,692,995, Cl. 240-1.300.

Wakamatsu, Hisato; and Endo, Kinio, to Nippondenso Kabushiki Kaisha. Fuel control system for internal combustion engines. 3,692,003, Cl. 123-32.0ea.

Waki, Misao: *See*—
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Walk, Georg. Machine tool with pivotable tool carriage. 3,691,613, Cl. 29-27.00c.

Walker, Charles W. E. Apparatus for measuring percent moisture content of particulate material using microwaves and penetrating radiation. 3,693,079, Cl. 324-58.50a.

Wallace, Robert H.: *See*—
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Wallshein, Melvin. Orthodontic system for turning a tooth. 3,691,635, Cl. 32-42.000.

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Walon, Raoul Guillaume Phillipe, to CPC International Inc., mesne. Soft candy containing confectionery syrup. 3,692,542, Cl. 99-134.00r.

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Washecheck, Paul H., to Continental Oil Company. Catalytic oxidation of olefins to yield carboxylic acids. 3,692,810, Cl. 260-413.000.

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Wayfield, David John. Fluid diverting housings and auxiliary devices. 3,692,242, Cl. 239-265.190.

Weaver, Max A.; and Straley, James M. Azo compounds containing an arylsulfonyl phenyl diazo component. 3,692,769, Cl. 260-207.100.

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Weber, Guy Paul, to La Cellophane. Apparatus for reading and electrophotographically reproducing microphotographs of varying sizes. 3,692,409, Cl. 355-45.000.

Weber, Paul E., to Bell & Howell Company. Semi-conductive apparatus for detecting light of given flux density levels. 3,693,016, Cl. 250-211.00j.

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Wedekind, Benno; and Kirsch, Werner. Protective bandage for pipelines to be protected against corrosion. 3,692,619, Cl. 161-88.000.

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Wiedmann, Siegfried K., to International Business Machines Corporation. Monolithic circuits with pinch resistors. 3,693,057, Cl. 317-235.00r.

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Winkler, Alfred; and Zanner, Johann. Jr., to Agfa Aktiengesellschaft. Projector for use with containers for motion picture film. 3,692,391, Cl. 352-123.000.

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Witt, Kenneth C., to Clark Equipment Company. Dual steering system. 3,692,138, Cl. 180-79.20r.

Witte, Gunter, to Gebr. Dingerkus. Apparatus for mounting handles to pots and the like. 3,691,605, Cl. 29-200.00j.

Witte, Josef; Pampus, Gottfried; Schon, Nikolaus; and Marwede, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Regulation of molecular weight of products obtained by the ring opening polymerisation of cycloolefines. 3,692,760, Cl. 260-93.100.

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Wolf, Richard. Balancing device. 3,691,870, Cl. 74-573.000.

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Woo, James T.; and Brown, Thayer A., Jr., to Dow Chemical Company, The. Interpolymers of vinylidene chloride and blocked vinyl isocyanates and process for coating articles therewith. 3,692,746, Cl. 260-77.5tb.

Wood, Marvin E., to Ecodyne Corporation. Filter screen training mechanism. 3,692,674, Cl. 210-401.000.

Woodling, George V. Fluid pressure responsive mechanism in a fluid pressure device. 3,692,439, Cl. 418-61.000.

Woodling, George V. Eccentrically disposed male and female spline teeth. 3,692,440, Cl. 418-61.000.

Woodruff, George M.; Schoonmaker, Donald; Daniels, David; and Waxler, Burton S., to General Foods Corporation. Pouch forming apparatus and method. 3,691,718, Cl. 53-29.000.

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Woolman, Myron. Standing easel for classroom use. 3,692,273, Cl. 248-460.000.

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Yao, Cheng, to Factory Mutual Research Corporation. Fixed fire extinguishing system utilizing recirculation of combustion products. 3,692,118, Cl. 169-1.00a.

Yasuoka, Yoshio, to Sanyo Electric Co., Ltd. Electronic oven. 3,692,968, Cl. 219-10.550.

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Young, Chauncey; and Watson, William H., to Riegel Paper Corporation. Removable side wall for tightly sealed drumhead cartons. 3,692,226, Cl. 229-17.00r.

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Yrjala, Ilmo. Measuring and regulation method, for water soluble, oxidizing or reducing compound particularly in pulp bleaching. 3,692,624, Cl. 162-49.000.

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Communications Satellite Corp.: *See*—
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Jayne, Murray L. Impact tool. Re. 27,479, 9–19–72. Cl. 173—13.

Kamola, Roman C., to Xerox Corp. Automatic development controller. Re. 27,480, 9–19–72, Cl. 118—7.

Phelon, R. E., Co., Inc.: *See*—
Piteo, Michael J. Re. 27,477.

Piteo, Michael J., to R. E. Phelon Co., Inc. Breakerless ignition system with automatic spark advance using triggering coil. Re. 27,477, 9–19–72. Cl. 123—148.

Reed, Thomas S., and E. S. Stanuch, to Borg-Warner Corp. Adjustable steering mechanism employing memory unit. Re. 27,481, 9–19–72, Cl. 74—493.

Rex Chainbelt Inc.: *See*—
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Symons, Loren G., to Rex Chainbelt Inc. Hydraulic bowl release for cone crushers. Re. 27,482, 9–19–72, Cl. 241—290.

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Burkett, Wilford B., A. J. Carsello, and H. I. Hazzard, to McCulloch Corp. Internal combustion engine casing. 224,811, 9–19–72, Cl. D77—1.

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Cocci, Alfred J. Covered container for food or the like. 224,778, 9–19–72, Cl. D9—216.

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Knauft, Charles P. Wrist watch. 224,803, 9–19–72, Cl. D42—8.

Knowles, Frederick G., to Eastman Kodak Co. Keyboard for a microfilm retrieval system. 224,791, 9–19–72, Cl. D26—5.

Knox, William C., Jr., to Kenneth R. Jacobson. Animal bed. 224,792, 9–19–72, Cl. D30—41.

Langworthy, Joseph J. Wall rack for nails or the like. 224,773, 9–19–72, Cl. D6—130.

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Popp, Lester G. Combined frame and basket for joining two bicycles. 224,817, 9–19–72, Cl. D90—8.

Price, John F., and L. L. Johnson, to Everwear Park & Playground Equipment, Inc. Playground climber or the like. 224,796, 9–19–72, Cl. D34—5.

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Sato, Stephens N., to Ivac Corp. Oxygen monitor. 224,814, 9–19–72, Cl. D83—1.

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Watamura, Donald, and E. L. Duester, to Herman Miller, Inc. Article support rack. 224,768, 9–19–72, Cl. D6—177.

Zuck, Earl D., to Ametek, Inc. Pressure gauge. 224,806, 9–19–72, Cl. D52—6.

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80 3,691,694
95TG 3,691,696
134 3,691,697
165.88 3,691,698
165.92 3,691,699
206 3,691,707
238S 3,691,701
249 3,691,702

CLASS 52
80 3,691,704
108 3,691,705
125 3,691,706
228 3,691,708
239 3,691,709
251 3,691,710
282 3,691,711
393 3,691,712
397 3,691,713
743 3,691,714

CLASS 53
3 3,691,715
23 3,691,703
29 3,691,718
35 3,691,717
59W 3,691,716
77 3,691,719
91 3,691,720
120 3,691,721
183 3,691,722
271 3,691,723
284 3,691,724
328 3,691,725
381 3,691,726
390 3,691,727

CLASS 55
33 3,691,728
70 3,691,729
166 3,691,730
223 3,691,731
227 3,691,732
257 3,691,733
275 3,691,734
391 3,691,735
484 3,691,736

CLASS 56
9 3,691,737
13.9 3,691,738
27.5 3,691,739
198 3,691,740
344 3,691,741
346 3,691,742
400.05 3,691,743

CLASS 57
34R 3,691,744
77.4 3,691,745
100 3,691,746
135 3,691,747
140J 3,691,748
3,691,749
144 3,691,750
145 3,691,751
210 3,691,700

CLASS 58
16 3,691,752
23D 3,691,754
23R 3,691,753
50R 3,691,755
58 3,691,756
76 3,691,757
88M 3,691,758

CLASS 60
39.09 3,691,759
39.18B 3,691,760
39.23 3,691,761
39.5 3,691,793
39.51R 3,691,762
39.55 3,691,763
39.74R 3,691,764
3,691,765
39.82P 3,691,766
53R 3,691,767
54 3,691,768
217 3,691,769
226A 3,691,771
254 3,691,770
320 3,691,772

CLASS 61
1 3,691,773
5 3,691,774
45D 3,691,775
53 3,691,776
69 3,691,777
72.3 3,691,778

CLASS 62
23 3,691,779
55 3,691,780
66 3,691,781
209 3,691,782
212 3,691,783
218 3,691,784
230 3,691,785
279 3,691,786
400 3,691,787

CLASS 64
7 3,691,788
11R 3,691,789
23 3,691,790
30E 3,691,791
31 3,691,792

CLASS 65
2 3,692,507
91 3,692,508
118 3,692,509
203 3,692,510

CLASS 66
126R 3,691,794
132R 3,691,795
193 3,691,796

CLASS 68
23.4 3,691,797

CLASS 70
84 3,691,799
373 3,691,800
456R 3,691,798

CLASS 71
29 3,692,511
65 3,692,512

CLASS 72
9 3,691,801
21 3,691,802
36 3,691,803
42 3,691,804
75 3,691,805
92 3,691,806
146 3,691,807
190 3,691,808
199 3,691,809
242 3,691,810
272 3,691,811
308 3,691,812
342 3,691,813
409 3,691,814
458 3,691,815
467 3,691,816
705 3,691,817

CLASS 73
23 3,691,818
40.5A 3,691,819
40.7 3,691,820
49.2 3,691,821
71.6 3,691,822
81 3,691,823
118 3,691,824
136A 3,691,825
139 3,691,826
141R 3,691,827
188 3,691,828
189 3,691,829
194B 3,691,830
203 3,691,831
204 3,691,832
3,691,833
208 3,691,834
209 3,691,835
213 3,691,836
3,691,837
231M 3,691,838
322 3,691,839
349 3,691,840
362R 3,691,841
398C 3,691,842
411 3,691,843
425.6 3,691,844
432A 3,691,845
432R 3,691,846
441 3,691,847
502 3,691,848
515 3,691,849
516R 3,691,850

CLASS 74
3.52 3,691,851
5 3,691,852
5.34 3,691,853
6 3,691,854
55 3,691,855
56 3,691,856
89 3,691,857
89.15 3,691,858
120 3,691,859
242.1R 3,691,860
330 3,691,861
379 3,691,862
478 3,691,863
479 3,691,864
491 3,691,867
492 3,691,865
493 Re.27,481
3,691,866
512 3,691,868
573 3,691,870
740 3,691,869
798 3,691,871
864 3,691,872
866 3,691,873

CLASS 75
20F 3,692,513
124 3,692,514
126A 3,692,515

CLASS 76
41 3,691,874

CLASS 81
57.14 3,691,875
58.1 3,691,876
177A 3,691,877

CLASS 82
1C 3,691,878
2.5 3,691,879
4A 3,691,880
4C 3,691,881
3,691,882
34R 3,691,883
36R 3,691,884
75 3,691,885

CLASS 83
1 3,691,886
277 3,691,887
302 3,691,888
401 3,691,889
624 3,691,890

CLASS 84
275 3,691,891
380 3,691,892
453 3,691,893
454 3,691,894
471 3,691,895
484 3,691,896

CLASS 85
62 3,691,897
68 3,691,924

CLASS 90
11A 3,691,899
3,691,900
11R 3,691,898
13.1 3,691,901

CLASS 91
1 3,691,902
49 3,691,903
169 3,691,904
216A 3,691,905
222 3,691,906
321 3,691,907
412 3,691,908
3,691,911
449 3,691,912
487 3,691,909
499 3,691,910

CLASS 92
76 3,691,913
169 3,691,914

CLASS 93
93K 3,691,915

CLASS 94
46AC 3,691,916

CLASS 95
10CT 3,691,919
10PO 3,691,917
10C 3,691,918
13 3,691,920
31 3,691,921
44R 3,691,922
53EB 3,691,923
86 3,691,925
94R 3,691,926

CLASS 96
1R 3,692,516
3,692,517
3,692,518
1.2 3,692,519
3,692,520
1.4 3,692,523
1.5 3,692,521
1.8 3,692,522
6 3,692,524
84R 3,692,525
108 3,692,526
109 3,692,527
140 3,692,528

CLASS 98
10 3,691,927
33 3,691,928
3,691,929
62 3,691,930
115K 3,691,931

CLASS 99
2 3,692,529
10 3,692,530
17 3,692,531
28 3,692,532
77.1 3,692,536
80PS 3,692,533
90P 3,692,534
92 3,692,535
100P 3,692,537
107 3,692,538
109 3,692,539
116 3,692,540
132 3,692,541
134R 3,692,542

144 3,692,543
172 3,692,544
195 3,692,545
204 3,692,546
281 3,691,932
282 3,691,933
290 3,691,934
327 3,691,935
337 3,691,936
340 3,691,937
348 3,691,938

CLASS 100

2 3,691,939
41 3,691,940
89 3,691,941
100 3,691,967
151 3,691,942
215 3,691,943
229A 3,691,944
229R 3,691,945
269B 3,691,946

CLASS 101

93C 3,691,947
183 3,691,948
216 3,691,949
247 3,691,956
415.1 3,691,950
450 3,691,951

CLASS 102

6 3,691,952
14 3,691,953
24 3,691,954
99 3,691,955

CLASS 104

9 3,691,957
88 3,691,958
3,691,959
148SS 3,691,960
155 3,691,961

CLASS 105

182R 3,691,962
368R 3,691,963

CLASS 106

5 3,692,547
22 3,692,548
33 3,692,549
38.25 3,692,550
38.3 3,692,551
208 3,692,552
307 3,692,553

CLASS 108

51 3,691,964
58 3,691,965
144 3,691,966

CLASS 112

11 3,691,968
70 3,691,969
127 3,691,970
440 3,691,971

CLASS 113

120H 3,691,972
121A 3,691,973

CLASS 114

.5F 3,691,974
16R 3,691,975
39 3,691,976
51 3,691,977
144 3,691,978
235R 3,691,979

CLASS 116

67R 3,691,980
70 3,691,981
3,691,982
114R 3,691,983
116 3,691,984
124 3,691,985
129R 3,691,987
129 3,691,986

CLASS 117

22 3,692,554
33.3 3,692,555
36.1 3,692,556
41 3,692,557
62 3,692,567
72 3,692,558
76T 3,692,559
93.31 3,692,560
100A 3,692,561
3,692,562
100B 3,692,563
102R 3,692,564
106R 3,692,565
3,692,566
138.8UF 3,692,569
138.8VA 3,692,568
161KP 3,692,570
201 3,692,571
3,692,572
211 3,692,573
212 3,692,574
213 3,692,575
217 3,692,576
225 3,692,577
227 3,692,578

CLASS 118

6 3,691,988
7 Re.27,480
8 3,691,989
35 3,691,990
107 3,691,992
629 3,691,991
637 3,691,993

CLASS 119

3 3,691,994
29 3,691,995
32 3,691,996
71 3,691,997
98 3,691,998

CLASS 123

8.01 3,691,999
8.07 3,692,000
8.09 3,692,001
8.11 3,692,002
32EA 3,692,003
41.57 3,692,004
51R 3,692,005
55VE 3,692,006
98 3,692,007
102 3,692,008
148E Re.27,477
3,692,009
185C 3,692,010

CLASS 125

11NT 3,692,011

CLASS 126

25R 3,692,012
41R 3,692,013
110R 3,692,014
200 3,692,015
271.2B 3,692,016
360A 3,692,017

CLASS 127

22 3,692,579
29 3,692,580
38 3,692,581
46A 3,692,582

CLASS 128

1B 3,692,019
1R 3,692,018
2B 3,692,020
13.2 3,692,024
69 3,692,021
87A 3,692,022
90 3,692,023
136 3,692,025
142.2 3,692,026
260 3,692,027
349R 3,692,029
369 3,692,028

CLASS 131

7 3,692,030

CLASS 132

9 3,692,031
3,692,032
3,692,066
11A 3,692,033
40 3,692,034

CLASS 134

3 3,692,583

CLASS 135

25 3,692,035

CLASS 136

67 3,692,586
83R 3,692,584
86R 3,692,585
134R 3,692,587
171 3,692,588

CLASS 137

81.5 3,692,036
83 3,692,037
116 3,692,038
118 3,692,039
142 3,692,040
238 3,692,041
296 3,692,042
315 3,692,043
318 3,692,044
344 3,692,045
382 3,692,046
403 3,692,048
489.5 3,692,049
491 3,692,050
495 3,692,047
544 3,692,051
561 3,692,052
562 3,692,053
596.18 3,692,054
604 3,692,055
625.43 3,692,056
625.44 3,692,057
627.5 3,692,058

CLASS 138

42 3,692,064
89 3,692,059
3,692,060
96 3,692,061
99 3,692,062
139 3,692,063

CLASS 139

1C 3,692,065
12 3,692,067
116 3,692,068

CLASS 140

106 3,692,069

CLASS 141

1 3,692,070
313 3,692,071
391 3,692,072

CLASS 143

133D 3,692,073

CLASS 144

1 3,693,186
39 3,692,074
136 3,692,075

CLASS 145

29B 3,692,076

CLASS 146

72 3,692,077

CLASS 148

6 3,692,589
23 3,692,590
31.5 3,692,596
144 3,692,591
172 3,692,592
3,692,593
3,692,594
187 3,692,595

CLASS 149

19 3,692,597
3,692,598
3,692,599
3,692,600

CLASS 150

29 3,692,078

CLASS 152

75 3,692,079
359 3,692,080

CLASS 156

74 3,692,601
79 3,692,602
85 3,692,603
108 3,692,604
132 3,692,605
151 3,692,606
175 3,692,607
242 3,692,609
249 3,692,610
282 3,692,608
358 3,692,611
375 3,692,612
498 3,692,613
580 3,692,614

CLASS 157

13 3,692,081

CLASS 160

87 3,692,082
206 3,692,083
368 3,692,084

CLASS 161

24 3,692,617
72 3,692,618
88 3,692,619
3,692,620
116 3,692,621
124 3,692,622
159 3,692,623

CLASS 162

49 3,692,624
161 3,692,625
164 3,692,092

CLASS 164

15 3,692,085
25 3,692,086
46 3,692,087
62 3,692,088
66 3,692,089
71 3,692,090
156 3,692,091
212 3,692,093
274 3,692,094

CLASS 165

2 3,692,616
4 3,692,095
7 3,692,096
9 3,692,097
3,692,098
10 3,692,099
29 3,692,100
47 3,692,101
104 3,692,102
105 3,692,103
163 3,692,104
181 3,692,105

CLASS 166

53 3,692,106
55 3,692,107
153 3,692,108
241 3,692,109
245 3,692,110
252 3,692,111
270 3,692,112
275 3,692,113
278 3,692,114
292 3,692,115
295 3,692,116

CLASS 169

1A 3,692,118
2R 3,692,117

CLASS 172

23 3,692,119
116 3,692,164
151 3,692,120
456 3,692,121

CLASS 173

13 Re.27,479
119 3,692,122
147 3,692,123
160 3,692,124

CLASS 174

42 3,692,919
48 3,692,920
72R 3,692,921
73R 3,692,922
84S 3,692,923
92 3,692,926
120SR 3,692,924
120C 3,692,925
139 3,692,927
143 3,692,928

CLASS 175

65 3,692,125
259 3,692,126
330 3,692,127

CLASS 176

3 3,692,626
68 3,692,627

CLASS 177

210 3,692,128
211 3,692,129

CLASS 178

5.4M 3,692,918
5.4R 3,692,929
7.3R 3,692,931
7.5D 3,692,934
7.5R 3,692,932
3,692,933
15 3,692,935
18 3,692,936
68 3,692,930

CLASS 179

1SA 3,692,937
2DP 3,691,593
3,692,939
2TV 3,692,938
6 3,692,940
15AL 3,692,941
15BV 3,692,942
18BA 3,692,946
18BC 3,692,947
18FA 3,692,948
18FF 3,692,944
18GF 3,692,945
3,692,949
18E 3,692,943
27CB 3,692,951
27D 3,692,950
41A 3,692,952
84VF 3,692,953
90AT 3,692,954
98 3,692,955
100.2CA 3,692,957
100.2Z 3,692,956
156A 3,692,958
175.1A 3,692,959
175.2R 3,692,960
3,692,961
3,692,962
3,692,963
175.31R 3,692,964

CLASS 180

5R 3,692,130
3,692,131
3,692,132
3,692,133
12 3,692,134
19R 3,692,135
65F 3,692,136
79.2R 3,692,137
3,692,138
94 3,692,139

CLASS 181

33E 3,692,141
33H 3,692,140
50 3,692,142

CLASS 182

24 3,692,143
48 3,692,144
70 3,692,145

CLASS 184

6.1 3,692,146

CLASS 188

2R 3,692,147
18A 3,692,148
69 3,692,149
71.5 3,692,150
72.5 3,692,151
79.5K 3,692,152
170 3,692,153
251A 3,692,154

CLASS 190

57 3,692,155

CLASS 192

.098 3,692,157
3.57 3,692,158
4A 3,692,156
3,692,159
4C 3,692,160
8R 3,692,161
13A 3,692,162
53F 3,692,163

CLASS 194

13 3,692,165

CLASS 195

28R 3,692,628
51R 3,692,629
63 3,692,630
66R 3,692,631
3,692,632
80R 3,692,633

CLASS 197

2 3,692,166
98 3,692,167

CLASS 198

41 3,692,168
43 3,692,169

CLASS 200

44 3,692,965
51.001 3,692,966

CLASS 203

11 3,692,634
62 3,692,635
71 3,692,636

CLASS 204

9 3,692,637
15 3,692,638
28 3,692,639
3,692,640
43 3,692,641
47 3,692,642
58 3,692,644
59R 3,692,643
67 3,692,645
81 3,692,646
105R 3,692,647
129 3,692,648
3,692,649
147 3,692,650
158R 3,692,651
3,692,652
3,692,656
165 3,692,653
180R 3,692,654
192 3,692,655
195M 3,692,657
219 3,692,658
246 3,692,660
269 3,692,661

CLASS 206

1A 3,692,170
7C 3,692,171
29 3,692,172
45.19 3,692,173
45.22 3,692,174
45.34 3,692,175
56AB 3,692,176

CLASS 208

8 3,692,662
44 3,692,663
48AA 3,692,664
112 3,692,666
120 3,692,665
3,692,667

CLASS 209

88 3,692,177

CLASS 210

18 3,692,668
31 3,692,669
32 3,692,670
45 3,692,671
47 3,692,672
52 3,692,673
82 3,692,178
94 3,692,179
139 3,692,180
331 3,692,181
386 3,692,182
401 3,692,674
415 3,692,183
437 3,692,184
493 3,692,185
494 3,692,186

CLASS 211

13 3,692,187
49D 3,692,188
134 3,692,189
135 3,692,190
184 3,692,191

CLASS 214

1BE 3,692,192
1BH 3,692,193
3,692,194
16.4C 3,692,195
152 3,692,196
390 3,692,197
653 3,692,198

CLASS 215

9 3,692,199
42 3,692,200

CLASS 217

12 3,692,201

CLASS 219

10.55 3,692,967
3,692,968
10.57 3,692,969
56 3,692,970
73 3,692,971
76 3,692,972
121P 3,692,973
147 3,692,974
202 3,692,975
264 3,692,976
343 3,692,977
384 3,692,978
493 3,692,979

CLASS 220

1BC 3,692,202
1.5 3,692,203
4R 3,692,204
9LG 3,692,205
15 3,692,206
3,692,207
23.4 3,692,210
24.5 3,692,208
54 3,692,209
63A 3,692,742

CLASS 221

9 3,692,211

CLASS 222

32 3,692,212
105 3,692,213
334 3,692,214
402.13 3,692,215

CLASS 223

91 3,692,216
111 3,692,217

CLASS 224

45T 3,692,218

CLASS 225

2 3,692,219
96.5 3,692,220

CLASS 226

23 3,692,221
110 3,692,222
199 3,692,223

CLASS 227

19 3,692,224

CLASS 228

4 3,692,225

CLASS 229

17R 3,692,226
3,692,227
29F 3,692,228
40 3,692,229
43 3,692,230
45 3,692,231
52B 3,692,232
71 3,692,233

CLASS 231

2E 3,692,234

CLASS 232

1 3,692,235

CLASS 233

26 3,692,236

CLASS 234

2 3,692,237

CLASS 235

61.11D 3,692,981
61.11E 3,692,982
3,692,983
61.12N 3,692,984
88 3,692,238
92PK 3,692,980
3,692,985
151.1 3,692,986
151.31 3,692,987

151.33 3,692,988
153 3,692,989
159 3,692,990

CLASS 236

15A 3,692,239
82 3,692,240

CLASS 239

15 3,692,241
265.19 3,692,242
401 3,692,243
419 3,692,244
488 3,692,245

CLASS 240

1.3 3,692,991
3,692,995
3,692,996
2MA 3,692,997
2 3,692,992
8.2 3,692,998
8.65 3,692,999
10 3,692,993
11.4R 3,692,994
41.6 3,693,000
128 3,693,001

CLASS 241

28 3,692,246
30 3,692,247
100.5 3,692,248
215 3,692,249
290 Re.27,482

CLASS 242

7.08 3,692,250
58.2 3,692,251
66 3,692,252
107.4 3,692,253
129.62 3,692,254
192 3,692,255
198 3,692,256
3,692,257

CLASS 244

3.21 3,692,258
40 3,692,259
78 3,692,260
114R 3,692,261
151A 3,692,262
3,692,263

CLASS 248

15 3,692,264
222 3,692,265
224 3,692,266
288 3,692,267
346 3,692,268
360 3,692,269
384 3,692,270
394 3,692,271
429 3,692,272
460 3,692,273

CLASS 250

41.3 3,693,008
43.5D 3,693,009
83.1 3,693,010
83.3H 3,693,011
3,693,025
106S 3,693,012
203R 3,693,013
3,693,014
209 3,693,015
211J 3,693,016
213VT 3,693,017
213 3,693,018
219DF 3,693,021
219FR 3,693,020
219D 3,693,019
230 3,693,022
231SE 3,693,023
3,693,024
291 3,692,479

CLASS 251

75 3,692,274
149.2 3,692,275
306 3,692,276

CLASS 252

8.55E 3,692,675
8.55R 3,692,676
25 3,692,677
37 3,692,678
46.4 3,692,679
49.6 3,692,680
51.5A 3,692,681
62 3,692,682
62.062 3,692,683
89 3,692,684
3,692,685
184 3,692,687
300 3,692,688
301.1L 3,692,689
316 3,692,690
404 3,692,691
412 3,692,692
415 3,692,693
439 3,692,694
3,692,695
3,692,696
3,692,697
3,692,698
440 3,692,699
455R 3,692,700
466B 3,692,701
511 3,692,702
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Robert Gottschalk, *Commissioner*